

Bibliografía de la Geología de Guatemala

1966 - 1983

Compilada por

**Samuel Bonis
S. Maité Bonis
Nola R. Bonis**

CIRMA

Digitized by the Internet Archive
in 2010 with funding from
Universidad Francisco Marroquín

<http://www.archive.org/details/bibliografadel00samguat>

Bibliografía de la Geología de Guatemala 1966 - 1983

Compilada por

Samuel Bonis
S. Maité Bonis
Nola R. Bonis
Dartmouth College

CIRMA
CENTRO DE INVESTIGACIONES
REGIONALES DE MESOAMÉRICA
La Antigua Guatemala

1990

Derechos Reservados © 1990, Samuel Bonis

DISPONIBILIDAD - AVAILABILITY

En Guatemala:

CIRMA
5^a Calle Oriente N° 5
La Antigua Guatemala

All other countries:

CIRMA - PMS
P.O. Box 38
South Woodstock, VT 05071

PRECIO - PRICE

Post-paid surface mail.

Guatemala:

Q. 5.00

Developing nations:

US\$ 5.00

Developed nations:

US\$ 10.00

A la memoria de *Guillermo Swezey* de CIRMA
– una inspiración al saber guatemalteco
y a la investigación multidisciplinaria.

To the memory of *William R. Swezey* of CIRMA
– an inspiration to Guatemalan scholarship
and multidisciplinary research.

INTRODUCTION

Two bibliographies of Guatemalan geology have been previously published:

Maldonado - Koerdell, M.

1958 *Bibliografía Geológica y Paleontológica de América Central*:
Instituto Panamericano de Geografía e Historia Pub. 204,
México, D.F.

Instituto Geográfico Nacional

1966 *Bibliografía Geológica de Guatemala, América Central*
(up to 1965).

Several factors have given a great impetus to the volume of material published on the geology of Guatemala since 1965. A collaborative geological mapping program between the Instituto Geográfico Nacional (now Instituto Geográfico Militar) and U.S. universities has produced numerous theses, maps and subsequent investigations by both professors and students, which has continued as former students themselves became professors. Continuous and varied volcanic activity in relatively accessible areas has served as a stimulus for research in volcanology and allied fields. The disastrous 1976 earthquake focused worldwide attention on Guatemala from many disciplines. And the Deep Sea Drilling Project in the Middle America Trench offshore Guatemala has generated numerous publications. Unfortunately, almost nothing of the considerable petroleum exploration effort has been published.

For abbreviations in the text that possibly might not be clear we have included an explanatory listing. The series of numbers in the citations represent in order: volume, number and page. For example: 10, 12, 36-40 indicate vol. 10, no. 12, p. 36-40. In the case of multi-authored publications, we have cited all the authors individually in their respective alphabetical order, with cross-reference to the complete citation listed under the first author.

Hispanoil Guatemala, Elf Aquitaine Guatemala, and the Kresge Physical Sciences Library of Dartmouth College supplied numerous courtesies that have significantly reinforced our bibliographic research. The Department of Earth Sciences at Dartmouth College provided

manuscript preparation services and printed a draft of this volume. Many colleagues made corrections and additions to the preprint that have greatly enhanced its completeness. We wish to thank them all for their gracious help.

Stephen R. Elliott of CIRMA made valuable editorial improvements, provided the innovative cross-referencing by author, and prepared the volume for publication.

Samuel Bonis
S. Maité Bonis
Nola R. Bonis

Guatemala City and
Hanover, New Hampshire
August, 1985

INTRODUCCION

Dos bibliografías geológicas de Guatemala han sido publicadas con anterioridad:

Maldonado - Koerdell, M.

1958 *Bibliografía Geológica y Paleontológica de América Central*:
Instituto Panamericano de Geografía e Historia Pub. 204,
México, D.F.

Instituto Geográfico Nacional

1966 *Bibliografía Geológica de Guatemala, América Central*
(hasta 1965).

Varios factores han contribuido al gran incremento de material publicado sobre la geología de Guatemala desde 1965. Un programa colaborativo de mapeo geológico entre el Instituto Geográfico Nacional (hoy Instituto Geográfico Militar) y universidades norteamericanas ha dado como resultado numerosas tesis, mapas e investigaciones posteriores. Estas investigaciones han perdurado en la medida que los otrora estudiantes han ascendido a la posición de profesores universitarios. La actividad volcánica continua y variada en zonas relativamente accesibles ha estimulado investigaciones en vulcanología y campos afines. El desastroso terremoto de 1976 en Guatemala atrajo atención mundial por parte de muchas disciplinas. El Deep Sea Drilling Project en la Fosa Mesoamericana, aguas afuera de Guatemala, ha producido numerosas publicaciones. Desafortunadamente, se ha publicado poco sobre el intenso esfuerzo para la exploración petrolera.

Hemos incluido una lista de equivalencias de abreviaturas para aclarar posibles confusiones en el texto. La serie de números en las citas representa, en el orden correspondiente: volumen, número de tomo, número de página. Por ejemplo, 10, 12, 36-40 indican vol. 10, no. 12, p. 36-40. En los casos de publicaciones con más de un autor, hemos citado a todos los autores individualmente en su respectivo lugar, con referencia cruzada a la entrada completa bajo el primer autor.

Hispanoil Guatemala, Elf Aquitaine Guatemala, y Kresge Physical Sciences Library de Dartmouth College nos prestaron valiosa asistencia que promovió considerablemente nuestras investigaciones biblio-

gráficas. El Department of Earth Sciences de Dartmouth College proporcionó ayuda con la preparación del manuscrito e imprimió un borrador de este volumen. Muchos colegas hicieron correcciones y adiciones al borrador que en gran medida ayudó para que fuera más completo. Queremos agradecer a todos ellos su ayuda tan amable y desinteresada.

Stephen R. Elliott de CIRMA dio valiosos consejos editoriales, elaboró el sistema de referencias cruzadas por autor y preparó el volumen para su publicación.

Samuel Bonis
S. Maité Bonis
Nola R. Bonis

Ciudad de Guatemala y
Hanover, New Hampshire
Agosto de 1985

ABREVIATURAS - ABBREVIATIONS

- AAPG*: American Association of Petroleum Geologists
Abs.: Abstract; Resumen
Abs. Prog.: Abstracts with program
Am. Antiquity: American Antiquity
Am. Inst. Min. Metall., and Pet. Eng., Soc. Min. Eng.: American Institute of Mining, Metallurgical and Petroleum Engineers, Society of Mining Engineers
Am. Jour. Sci.: American Journal of Science
Am. Mineral.: American Mineralogist
Am. Phil. Soc.: American Philosophical Society
Am. Soc. Photogramm.: American Society of Photogrammetry
Ann. Mtg.: Annual Meeting ; Reunión Anual
Asoc. Mex. Geol. Petroleros: Asociación Mexicana de Geólogos Petroleros
Beih. Geol. Jahrb.: Beihefte Geologische Jahrbuch
Berlin. Geowiss. Abh.: Berliner Geowissenschaftliche Abhandlungen, Reihe A
Bull.: Bulletin
Bull. Volc.: Bulletin Volcanologique
Bull. Centre Rech. Pau, SNPA: Bulletin du Centre de Recherches de Pau, Société Nationale des Pétroles d'Aquitaine
Bull. suisse de Minéral. Pétrogr.: Bulletin suisse de Minéralogie et Pétrographie
Calif. Univ. Pub. Geol. Sci.: University of California Publications in Geological Sciences
Can. Soc. Petrol. Geol.: Canadian Society of Petroleum Geologists
Carib. Geol. Conf.: Caribbean Geological Conference
Congr. Latinoam. Geol.: Congreso Latinoamericano de Geología
Conn. Acad. Arts Sci. Mem.: Memoir of the Connecticut Academy of Arts and Sciences
Contrib. Mineral. Petrol.: Contributions to Mineralogy and Petrology
C.R. Acad. Sci. Paris: Comptes-Rendus Academie des Sciences, Paris
Deutsch. Akad. Naturforsch: Deutsche Akademie Naturforschung
Dissert. Abs.: Dissertation Abstracts (Ann Arbor, Michigan)
DSDP: Deep Sea Drilling Project, Washington, D.C., (U.S. Government Printing Office)
Earth Planetary Sci. Lett.: Earth and Planetary Science Letters

- Econ. Geol.*: Economic Geology
Engin. Min. Jour.: Engineering and Mining Journal
EOS: Transactions of the American Geophysical Union
Geochim. Cosmochim. Acta: *Geochimica et Cosmochimica Acta*
Geof. Intl.: Geofísica Internacional
Geol. Assoc. Canada: Geological Association of Canada
Geol. en Mijnbouw: Geologie en Mijnbouw
Geol. Jahr.: Geologische Jahrbuch, Reihe B.
Geol. Rdsch.: Geologische Rundschau
Geol. Soc. London Spec. Pub.: Geological Society of London Special Publication
Geophys. Res. Letters: Geophysical Research Letters
Geosci. Canada: Geoscience Canada
GSA: Geological Society of America
Gulf Coast Assoc. Geol. Soc. Trans.: Transactions of the Gulf Coast Association of Geological Societies
ICAITI Pub. Geol.: Instituto Centroamericano de Investigación y Tecnología Industrial Publicaciones Geológicas, (Guatemala)
IGN: Instituto Geográfico Nacional, Guatemala
INSIVUMEH: Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología, (Guatemala)
Inst. Geol. Sci. Counc. Overseas Mem.: Institute of Geological Sciences Council Overseas Memoir (London)
Int. Assoc. Volcano. and Chem. Earth's Int.: International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)
Intl. Geol. Cong.: International Geological Congress
Intl. Symp., (n.p. approx.): Simposio Internacional; páginas sin numeración, número aproximado de página
International Symposium; no pagination, approximate page number
IUGG: International Union of Geodesy and Geophysics
Jour. Geol.: Journal of Geology
Jour. Geomag. Geoelectr.: Journal of Geomagnetism and Geoelectricity
Jour. Geophys. Res.: Journal of Geophysical Research
Jour. Geotech. Eng. Div., Am. Soc. Civil Eng.: Journal of Geotechnical Engineering Division, American Society of Civil Engineers
Jour. Paleontol.: Journal of Paleontology
Jour. Petrol. Geol.: Journal of Petroleum Geology

- Jour. Volc. Geotherm. Res.*: Journal of Volcanology and Geothermal Research
- Mem.*: Memoir
- Min. Ann. Rev.*: Mining Annual Review (Great Britain)
- Mineral. Mag.*: Mineralogical Magazine
- MS Thesis*: Tesis de Maestría (en Ciencias)
- Münster. Forsch. Geol. Paläont.*: Münstersche Forschungen zur Geologie und Paläontologie
- Natl. Sci. Found.*: U.S. National Science Foundation
- n.p., approx.*: Páginas sin numeración, número aproximado de página
No pagination, approximate page number
- Pan Amer. Inst. Geogr. Hist.*: Instituto Panamericano de Geografía e Historia (México D.F.)
- Ph.D. Thesis*: Tesis de Doctorado
- Quat. Res.*: Quaternary Research
- Schweiz. Miner. Petrog. Mitt.*: Schweizerische Mineralogische und Petrographische Mitteilungen
- Soc. Econ. Paleont. Mineral. Spec. Pub.*: Society of Economic Paleontologists and Mineralogists Special Publication
- Soc. Geol. Mex. Bol.*: Boletín Sociedad Geológica Mexicana
- Soil Sci. Soc. Am. Proc.*: Proceedings of the Soil Science Society of America
- Spec. Pap.*: Special Paper
- Spec. Pub.*: Special Publication
- SSA*: Seismological Society of America
- Tschermaks Mineral. Petrog. Mitt.*: Tschermaks Mineralogische und Petrographische Mitteilungen
- Univ. Nac. Autón. México*: Universidad Nacional Autónoma de México (UNAM)
- U.S. Bur. Mines*: United States Bureau of Mines
- USGS Prof. Pap.*: United States Geological Survey Professional Paper
- Z. Deutsch. Geol. Ges.*: Zeitschrift der Deutschen Geologischen Gesellschaft
- Z. Geomorph. N.F. Suppl. Bd.*: Zeitschrift für Geomorphologie Neue Folge Supplementbände
- Zbl. Geol. Paläont.*: Zentralblatt für Geologie und Paläontologie

MAPAS – MAPS

- Geologic-tectonic map of the **Caribbean region**, 1:2,500,000
CASE, J.E., HOLCOMBE, T.L. (1980)
- Mapa metalogenético de **América Central**, 1:2,000,000
DENGO, G., LEVY, E., BOHNENBERGER, O.H., CABALLEROS, R. (1969)
- Central America**, world volcanological map
BOHNENBERGER, O.H. (1978)
- Preliminary photogeologic map of **Chiapas, Mexico**,
and adjacent **northwestern Guatemala** ROWAN, L.C. (1982)
- Atlas Nacional de Guatemala**
INSTITUTO GEOGRAFICO NACIONAL (1972)
- Mapa geológico de la **República de Guatemala**
Geologic map of the **Republic of Guatemala**, 1:500,000
BONIS, S., BOHNENBERGER, O.H., DENGO, G. (1970)
- Fracture map, earthquakes of February, 1976, **Guatemala valley**
Mapa de fracturas, sismos de febrero 1976, **Valle de Guatemala**,
1:25,000 BOHNENBERGER, O.H., BONIS, S. (1976)
- Mapa de reconocimiento geológico del cinturón plegado de
Alta Verapaz, Guatemala – Geologic reconnaissance map of the
Alta Verapaz fold belt, Guatemala, 1:125,000 BONIS, S. (1967)
- Mapa geológico general, **Baja Verapaz** y parte sur de la Alta Verapaz,
Guatemala, 1:125,000 BOOM, G., Van Den, MÜLLER, A., NICOLAUS, H., PAULSEN, S. (1971)
- Mapa geológico del cuadrángulo **Chiquimula** – Guatemala, 1:250,000
BURKART, B., CLEMONS, R.E., GODOY, J. (1969)

Mapa geológico del cuadrángulo – IGN, Guatemala, 150,000

Alotenango	SKILTON, N., SCHWEIG, E., VESSELL, R.K. (1983)
Amatitlán	EGGERS, A.A. (1975)
Cerro Montecristo	BURKART, B. (1966)
Chanmagua	BURKART, B. (1966)
Chiantla	BLOUNT, D.N. (1968)
Chimaltenango	KOCH, A.J., McLEAN, H. (1977)
Chiquimula	CLEMONS, R.E. (1966)
Ciudad de Guatemala	KOCH, A.J., McLEAN, H. (1977)
Cobán	PAULSEN, S. (1976)
Cubulco	BOOM, G., Van Den MÜLLER, A., NICOLAUS, H. (1981)
Cuilapa	DARTMOUTH COLLEGE (1980)
Cuilco	BRADFORD, D.E., COLLINS, E.M., SIESSER, W.G. (1968)
Esquipulas	BURKART, B. (1966)
Huehuetenango	COLLINS, E.M., JOSEY, W.L., STEVENS, W.E. (1981)
Jocotán	CRANE, D.C. (1966)
Nebaj	JOSEY, W.L., McRFFE, D.F., WESSON, J.M. (1975)
Nueva Santa Rosa	DARTMOUTH COLLEGE (1980)
La Democracia	ANDERSON, T.H., BOYD, A., DAVIS, G.H. (1967)
Los Pajales	MÜLLER, A., NICOLAUS, H.J. (1979)
Río Hondo	NEWCOMB, W.E. (1978)
Sacapulas	FORTH, D.R. (1975)
San Agustín Acasaguastlán	BOSC, E. (1979)
San José Pinula	DARTMOUTH COLLEGE (1975)
San Juan Sacatepéquez	RITCHIE, A.W. (1981)
San Miguel Acatán	BURKART, B., CLEMONS, R.E. (1976)
San Sebastián, Huehuetenango	ANDERSON, T.H. (1972)
Sanarate	LAWRENCE, D.P. (1980)
Santa Bárbara	JOSEY, W.L., KESLER, S.E., STOESSELL, R.K. (1972)
Tactic	NICOLAUS, H.J., MÜLLER, A. (1979)
Timushán	CRANE, D.C. (1966)
Tirritibol	PAULSEN, S. (1976)
Todos Santos Cuchumatán	BURKART, B., CLEMONS, R.E. (1976)
Tucurú	PAULSEN, S. (1980)
Zacapa	SCHWARTZ, D.P. (1978)

A

AAPG Bull. World Petroleum Developments (Guatemala)

1966-1983 (1966, p. 1598-1599, 1602)

(1967, p. 1478-1481)

(1968, p. 1407-1409)

(1969, p. 1614-1616)

(1970, p. 1376-1378)

(1971, p. 1455-1458)

(1972, p. 1611, 1632, 1652)

(1973, p. 1880, 1901, 1923)

(1974, p. 1921-1922, 1941, 1966)

(1975, p. 1766-1767, 1788, 1805)

(1976, p. 1651-1652, 1675, 1694)

(1977, p. 1585-1586, 1618-1619, 1631)

(1978, p. 2051-2052, 2068, 2085-2086)

(1979, p. 1751-1753, 1782)

(1981, p. 1944-1945, 1960, 1979)

(1982, p. 2117, 2127, 2128, 2155)

(1983, p. 1851, 1875)

ABBOT, W.

HARPER, H., RIDER, J., ABBOT, W. (1982)

ABURTO, A.

LANGER, C.J., WHITCOMB, J.P., ABURTO, A. (1976)

ACEITUNO, M., GODOY, J.

1966 Libreto guía para la excursión "C", Ciudad de Guatemala-Chiquimula-Ciudad de Guatemala, en *Libreto guía de las excusiones*, Segunda Reunión de Geólogos de América Central; Guatemala: IGN, Guatemala, p. "C", 1-10.

ACEVEDO GONZALES, M., et al.

1976 The relief inversion as a geomorphological factor in the American mediterranean, in *Geomorphology and paleogeography*: 23 Int. Geogr. Congr. Proc. 3; vol. 1, p.125-128.

ADAMS, R.E.W., BROWN, W.E., Jr., CULBERT, T.P.

1981 Radar mapping, archeology, and ancient Maya land use: *Science* 213, 4515, 1457-1463.

- ADDICOT, W., RICHARDS, P.W. (compilation coordinators)
- 1981 *Plate tectonic map of the Circum-Pacific region, Northeast Quadrant*: AAPG, 1:10,000,000.
- ALBRECHT, P.
- CONNAN, J., HUSSLER, G., ALBRECHT, P. (1980)
- ALEXANDER, J., Jr.
- 1978 Energy analysis and simulation of the Guatemala earthquake, 4 February 1976: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2, (n.p., approx. 259-276), Guatemala City.
- ALLEN, R.V.
- 1978 Tiltmeter observations near a large earthquake: *SSA Bull.* 68, 3, 855-857.
- ENDO, E.T., WARD, P.L., MARQUEZ, D., ALLEN, R.V., HARLOW, D.H. (1973)
- ALMON, W.R.
- DAVIES, D.K., ALMON, W.R. (1978)
- DAVIES, D.K., ALMON, W.R., BONIS, S., HUNTER, B.E. (1979)
- ALVARADO, A.
- 1982 *Phosphate retention in Andepts from Guatemala and Costa Rica as related to other soil properties*: Ph.D. Thesis, North Carolina State Univ., 89p.
- AMBOSE, E., HUSSONG, D., CARTER, J.
- 1981 Seismic refraction results from the lower slope of the Middle America Trench, offshore Guatemala (abs.): *EOS* 62, 45, 1042.
- ANDERSON, A.T., Jr.
- 1976 Coalescence ascent and crystallization of the 1974 Fuego magma: a progress report (abs.): *EOS* 57, 4, 346.
- 1981 Micron thick oscillatory zones on plagioclase; a volcanological clock (abs.): *GSA Abs. Prog.* 13, 7, 396.
- ROSE, W.I. Jr., ANDERSON, A.T. Jr., WOODRUFF, L.G., BONIS, S. (1978)
- ANDERSON, R.
- BACON, M., ANDERSON, R. (1981)
- DALLAS, A., ANDERSON, R., HOBART, M. (1980)

- ANDERSON, R., BACON, M., BREWER, P.
- 1983 Removal of 230 Th and 231 Pa P2 at ocean margins (abs.): *Earth Planetary Sci. Letters* 66, 73-90.
- ANDERSON, T.H.
- 1967 Road log (Guía del trayecto): Huehuetenango-El Tapón, in Bonis, S., ed., *Excursion Guidebook for Guatemala*, 1967 Ann. Mtg. Geological Society of America: IGN, Guatemala Bol. Geol. 4, p.4-10; 40-46. (English and Spanish)
- 1967 *Geology of the middle third of the La Democracia quadrangle, Guatemala*: MA Thesis, Univ. Texas at Austin, 81p.
- 1969 First evidence for glaciation in Sierra Los Cuchumatanes Range, northwestern Guatemala (abs.): *GSA Spec. Pap.* 121, p.387.
- 1969 Pre-Pennsylvanian and later displacements along Chixoy-Polochic fault trace, northwestern Guatemala (abs.): *GSA Spec. Pap.* 121, p.6-7.
- 1969 *Geology of the San Sebastián Huehuetenango quadrangle, Guatemala, Central America*: Ph.D. Thesis, Univ. Texas at Austin, 218p. (Dissert. Abs. Int. 30, 4, 1749 B).
- 1972 *Mapa geológico del cuadrángulo San Sebastián, Huehuetenango*: IGN, Guatemala, 1:50,000.
- 1983 Geology along the Cuilco-Polochic fault zone in western Guatemala (abs.): *Carib. Geol. Conf.* 10, Cartagena, Abs. Prog., p.18.
- CLEMONS, R.E., ANDERSON, T.H., BOHNENBERGER, O.H., BURKART, B. (1974)
- CLEMONS, R.E., ANDERSON, T.H., BURKART, B. (1971)
- ERDLAC, R.J. Jr., ANDERSON, T.H. (1979, 1982)
- KESLER, S.E., ANDERSON, T.H. (1972)
- KILBURG, J., ANDERSON, T.H. (1978, 1979)
- SANDSTROM, M.A., ANDERSON, T.H. (1979)
- SCHMIDT, V.A., ANDERSON, T.H. (1978)
- ANDERSON, T.H., BOYD, A., DAVIS, G.H.
- 1967 *Mapa geológico del cuadrángulo La Democracia*: IGN, Guatemala, 1:50,000.

- ANDERSON, T.H., BURKART, B., CLEMONS, R.E.,
BOHNENBERGER, O.H., BLOUNT, D.N.
1973 Geology of the western Altos Cuchumatanes, northwestern
Guatemala: *GSA Bull.* 84, 3, 805-826.
- ANDERSON, T.H., ERDLAC, R.J. Jr., SANDSTROM, M.A.
1980 Post-Cretaceous strike-slip offset along the Chixoy-Polochic fault
zone, Guatemala (abs.): *GSA Abs. Prog.*, 12, 7, 379.
- ANDERSON, T.H., SCHMIDT, V.A.
1978 Mesozoic crustal evolution of Middle America and the
Caribbean: geologic considerations (abs.): *EOS* 59, 404.
- 1983 The evolution of Middle America and the Gulf of
Mexico-Caribbean Sea region during Mesozoic time: *GSA Bull.*
94, 941-966.
- ANDRADE, D.
MONGES CALDERA, J., JACHENS, R., ANDRADE, D., CASE, J.E. (1976)
- ANDREWS, J.C.
1968 A Guatemala volcano twenty years after: *Appalachia Mag.* no.
147, p.212-222.
- ANONIMO-ANONYMOUS
1975 Trinidad is booming. Guatemala shows promise: *World Oil* 181,
3, 59-60, 62, 64.
1975 Guatemala: excellent potential: *Petróleo Int.* 33, 11, 84-86.
1976 Conjunctive use of surface waters and ground waters in river
basin development: notes from participating countries, in *River
basin development; policies and planning*: Vol. I: U.N. Dep. Econ.
Soc. Aff., Nat. Resour./Water Ser. (USA), No. 6, Vol. I,
p.149-154, (United Nations International Seminar on river basin
and interbasin development, Budapest, Sept. 16-26, 1975).
1976 Guatemala's class-conscious quake: *Economist* 258, 6912, 51-52.
1976 How the quake hit Guatemala: *New Civ. Eng.* (London) 184,
18-21.
1976 Some lessons from Guatemala's catastrophe: *New Scientist* 70,
620.

ANONIMO-ANONYMOUS (cont.)

- 1977 Descubren otro tren estructural: *Petróleo Internacional*, Nov., p. 139-143.
- 1978 Guatemala (abs.): *USGS Prof. Pap.* 1100, p.342.
- 1980 Future petroleum provinces are many in Gulf Mexico-Caribbean area: *Oil and Gas Jour.* Oct. 20, 1980, p.216-226.
- 1980 Seminar on the protection of monuments in seismic areas: *Nature Resour.* 16, 37.
- 1980 Guatemala: *World Oil* 191, 3, 86-92.
- 1981 Guatemala: nickel laterite mining and processing facilities: *Engin. Mining Jour.* 182, 12, 133-136.
- 1981 Texaco, Amoco, subsidiaries drill Guatemala wildcat strike: *Oil and Gas Jour.* April 20, 1981, p.48.
- 1982 Guatemala strike yields more low gravity oil: *Oil and Gas Jour.* Jan. 25, 1982, p.112.
- 1983 Mining activity in the western world: *Mining Magazine* 145, 1, 40-68.

ANTOINE, J.W., BRYANT, W.R.

- 1969 Distribution of salt and salt structures in Gulf of Mexico: *AAPG Bull.* 53, 12, 2543-2550.

ANTOINE, J.W., MARTIN, R.G., PYLE, T.G., et al.

- 1974 Continental margins of the Gulf of Mexico, in Burk, C.A. and Drake, C.L., eds., *The geology of continental margins*: New York, Springer-Verlag, p.683-693.

AOKI, K.

McBIRNEY, A.R., AOKI, K., BASS, M.N. (1967)

ARAGON, C.

MUÑOZ, P., VELASQUEZ, V., ARAGON, C., et al. (1978)

ARANGO, I.

SEED, H.B., ARANGO, I., et al. (1981)

SEED, H.B., IDRISI, I.M., ARANGO, I. (1983)

ARIAS, J.

HUSID, R., ESPINOSA, A.F., ARIAS, J., HERMOSILLA, J. (1977)

ASARO, F.

STROSS, F., SHEETS, P., MICHEL, H. (1983)

- ASCARRUNZ K, R.
KESLER, S.E., ASCARRUNZ K, R. (1972, 1973)
- ASHWORTH, E.T.
1974 *Foraminifera from the Cretaceous of the Central Cordillera of Guatemala*: Ph.D. Thesis, Ohio State Univ., 128p. (Dissert. Abs. Int.35, 11, 5554B, 1975).
- ASKENASY, P., DIXON, J., MCKEE, T.
1973 Spheroidal halloysite in a Guatemalan soil: *Soil Sci. Soc. Am. Proc.* 37, 5, 799-803.
- ASTURIAS, J.
ESPINOSA, A.F., ASTURIAS, J., QUESADA, A. (1978)
HUSID, R., ASTURIAS, J. (1978)
- ASPINALL, A.
HAMMOND, N., ASPINALL, A., *et al.* (1977)
- AUBOUIN, J.
HESSE, R., AUBOUIN, J., *et al.* (1980)
RENARD, V., AUBOUIN, J., LONSDALE, P., STEPHAN, J. (1980)
von HUENE, R., AUBOUIN, J. (1982)
von HUENE, R., AUBOUIN, J., *et al.* (1980, 1982, 1982)
- AUBOUIN, J., AZÉMA, J., *et al.*
1982 The Middle America Trench in the geological framework of Central America: *DSDP* 67, p.747-755.
- AUBOUIN, J., BLANCHET, R., TARDY, M.
1976 From the Caribbean to the North and South American Cordilleras (abs.): *Tercer Cong. Latinoam. Geol.*, Resúmenes, p.9-10.
- AUBOUIN, J., BOURGOIS, J., von HUENE, R., AZÉMA, J.
1982 La marge pacifique du Guatemala; un modele de marge extensive en domaine convergent: *C.R. Acad. Sci. Paris, Ser. 2*, 295, 5, 607-614.
- AUBOUIN, J., STEPHAN, J.F., RENARD, V., ROUMP, J.,
LONSDALE, P.
1981 Subduction of the Cocos Plate in the Mid American Trench: *Nature*, 294, Nov., 146-150.
1982 A seabeam survey of the leg 67 area, Middle America Trench off Guatemala: *DSDP* 67, p.733-738.

- AUBOUIN, J., STEPHAN, J.F., ROUMP, J., RENARD, V.
- 1982 The Middle America Trench as an example of a subduction zone: *Tectonophysics* 86, 113-132.
- AUBOUIN, J., von HUENE, R., *et al.*
- 1979 Premiers résultats des forages profonds dans le Pacifique au niveau de la fosse du Guatemala (fosse d'Amérique Centrale), (leg 67 du DSDP: Mai-Juin 1979). *C.R. Acad. Sci. Paris*, t. 289, Série D, p.1215-1220.
- 1981 A summary of DSDP Leg 67; shipboard results from the Mid-America trench transect off Guatemala, *in* Publications du 26e congrès géologique international; Colloque C3, Géologie des marges continentales: *Oceanologica Acta* (FRA), vol. 4, no. 1, p. 225-232.
- 1982 Leg 84 of the Deep Sea Drilling Project, subduction without accretion: Middle America Trench off Guatemala: *Nature* 297 (June 10, 1982) p. 458-460.
- 1982 Subduction sans accrétion: la marge pacifique du Guatemala: premiers résultats du Leg 84 du DSDP (Janvier-Février, 1982): *C.R. Acad. Sci. Paris*, 294, 803-812.
- 1982 *Initial Reports, DSDP, 67:* Washington (U.S. Gov't Printing Office), 799p.
- 1982 Sites 494-500 Middle America Trench: *DSDP 67*, p. 27-347.
- AUGELLI, J.P.
- WEST, R.C., AUGELLI, J.P. (1966)
- AYDIN, A., NUR, A.
- 1982 Evolution of pull-apart basins and their scale independence: *Tectonics* 1, 1, 91-105.
- AZÉMA, J.
- AUBOUIN, J., AZÉMA, J., *et al.* (1982)
- AUBOUIN, J., BOURGOIS, J., von HUENE, R., AZÉMA, J. (1982)
- AZÉMA, J., TOURNON, J.
- 1982 The Guatemalan Margin, the Nicoya Complex, and the origin of the Caribbean Plate: *DSDP 67*, p. 739-745.

B

BABENDERERDE, S.

- 1982 Maschineller Vortriebeines 26 km langen Tunnels unter schwierigen Bedingungen, in Mueller, L. ed., *30th geomechanical colloquium, Austrian Soc. Geomechanics, Salzburg: Rock mechanics supplementum 12*, p.263-273.

BACON, M.

ANDERSON, R., BACON, M., BREWER, P. (1983)

BACON, M., ANDERSON, R.

- 1981 The distribution of thorium isotopes between dissolved and particulate forms in seawater (abs.): *EOS 62*, 45, 1011.

BALDWIN, D.E.

- 1972 *The geology of the eastern half of the Joyabaj quadrangle, west-central Guatemala*: MS Thesis, Univ. Florida.

BALLY, A.W.

COOK, T.D., BALLY, A.W., (eds.) (1975)

BANKS, P.O.

GOMBERG, D.M., BANKS, P.O., McBIRNEY, A.R. (1968)

BALTUCK, M.

- 1983 Intersection of a strike-slip and subducting plate boundary; Guatemala and the Middle America Trench (abs.): *EOS 64*, 18, 311-312.

BANERGEE, U.C., BARGHOORN, E.S.

- 1974 Morphology and the fine structure of the pollen grains of maize and its relatives (abs.): *Geoscience Man* 9, 71.

BANKS, N.G., RICHARDS, M.L.

- 1969 Structure and bathymetry of western end of Bartlett Trough, Caribbean Sea: *AAPG Mem.* 11, 221-228.

BANKS, P.O.

- 1974 Pre-Mesozoic Rocks of the Caribbean region (abs.): *GSA Abs. Prog.* 7, 643.

- BANKS, P.O. (cont.)
- 1975 Basement rocks bordering the Gulf of Mexico and the Caribbean Sea, in Nairn, A., Stehli, F., eds., *The Ocean Basins and Margins*, v. 3, *The Gulf of Mexico and the Caribbean*: New York, Plenum Press, p.181-199.
- BARDINTZEFF, J.M., BROUSSE, R., CLOCHIATTI, R., WEISS, J.
- 1980 Evolution des phénocristaux et leur inclusions magmatiques dans la "dacite" du dôme du Santiaguito (Guatemala): *C.R. Acad. Sci. Paris*, 290(D): 743-746.
- BARGHOORN, E.S.
- BANERGEE, U.C., BARGHOORN, E.S. (1974)
- BARTEL, J.R.
- 1981 *Petrology of fluvial and shoreline sands in a modern arc-trench gap, Guatemala*: MS Thesis, Western Michigan Univ., 66p.
- BARY, D.
- 1965 *Minor element content of recent Central American volcanics*: MA Thesis, Dartmouth College, 111p.
- BASS, M.N.
- McBIRNEY, A.R., AOKI, K., BASS, M.N. (1967)
- McBIRNEY, A.R., BASS, M.N. (1969, 1969)
- BATES, F., KILLIAN, C.
- 1982 Changes in housing in Guatemala following the 1976 earthquake; with special reference to earthen structures and how they are perceived by disaster victims: *Disasters* 6, 2, 92-100.
- BATESON, J.H.
- 1972 New interpretation of geology of the Maya Mountains, British Honduras: *AAPG Bull.* 56, 5, 956-963.
- HALL, I.H.S., BATESON, J.H. (1972)
- KESLER, S.E., BATESON, J.H., JOSEY, W.L., et al. (1971)
- KESLER, S.E., KIENLE, C.F., BATESON, J.H. (1974)
- BATESON, J.H., HALL, I.H.S.
- 1971 Revised geologic nomenclature for pre-Cretaceous rocks of British Honduras: *AAPG Bull.* 55, 529-530.
- 1977 The geology of the Maya Mountains, Belize: *Inst. Geol. Sci. Counc. Overseas Mem.* 3, 44p.

BEATY, D.H., BEYER, H.C.

- 1974 *Geology of the northeastern portion of the Cuilapa quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 86p.

BENGOECHEA, A.

- BOHNENBERGER, O.H., BENGOECHEA, A., et al. (1969)

BERGER, R., DeATLEY, S., PROTSCHE, R., WILLEY, G.R.

- 1974 Radiocarbon chronology for Seibal, Guatemala: *Nature* 252, 5483, 472-473.

BERGQUIST, C.L., DOBSON, D.C., ERLER, E.L., HITZMAN, M.W.

- 1976 *Geology of the western portion of the Cuilapa quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 114p.

BERNER, P.C.

- 1975 Discoveries and policies stir interest in Guatemala: *World Oil* 180, 4, 78-82.

BERNOTAT, W.H.

- 1973 Principal component maps instead of trend surface maps for modal and chemical data of granitoid rock bodies: *Tschermaks Mineral. Petrogr. Mitt.* 19, 3, 185-207.

BERTRAND, J., DELALOYE, M., et al.

- 1978 Ages K/Ar sur diverses ophiolites et roches associées de la Cordillère Central du Guatemala: *Bull. suisse Minéral. Pétrogr.* 58, 3, 405-412.

BERTRAND, J., et al.

- 1979 Studies on ophiolites in selected regions of the world (WG 9a), in International geodynamics project: Final report of Switzerland: *Schweiz. Mineral. Petrogr. Mitt.* 59, 1-2, 171-177.

BERTRAND, J., SARP, H.

- 1976 Sur la présence du vuagnatite dans un gabbro ophiolitique du Guatemala: *Bull. suisse Minéral. Pétrogr.* 56, 3, 540-544.

BERTRAND, J., VUAGNAT, M.

- 1975 Sur la présence de basaltes en coussins dans la zone ophiolitique méridionale de la Cordillère Centrale du Guatemala: *Bull. suisse Minéral. Pétrog.* 55, 1, 137-142.

BERTRAND, J., VUAGNAT, M. (cont.)

- 1976 Étude pétrographique de diverses ultrabasites ophiolitiques du Guatemala et de leur inclusions: *Bull. suisse Minéral. Pétrogr.* 56, 3, 527-540.
- 1977 Données chimiques sur les ophiolites du Guatemala: *Schweiz. Mineral. Petrogr. Mitt.* 57, 3, 466-483.
- 1980 Inclusions in the serpentinite melange of the Motagua fault zone, Guatemala, in *Proceedings of the Intl. Symp. on tectonic inclusions and associated rocks in serpentinites*: Arch. Sci. (Soc. Phys. Hist. Nat. Genève) 33, 2-3, 321-335.

BEST, D.M.

- 1977 *Spatial and temporal relationships of earthquake activity in the Circum-Caribbean and adjacent regions*: Ph.D. Thesis, Univ. North Carolina, Chapel Hill, 159p.

BETHANCOURT, H., DOMINICO, E.

- 1982 Characteristics of the Zunil geothermal field, western Guatemala: *Geotherm. Resources Council Trans.* 6, 241-244.

BETHANCOURT, H., DOMINICO, E., GIRELLI, M., PASQUARÉ, G.

- 1977 La exploración del área geotérmica de Moyuta: *Simposio Internacional Sobre Energía Geotérmica en América Latina*, Roma, p.177-188.

BEYER, H.C.

BEATY, D.H., BEYER, H.C. (1974)

BICKFORD, T.

ROSE, W.L. Jr., BONIS, S., STOIBER, R.E., KELLER, M., BICKFORD, T. (1973)

BILODEAU, S.W.

- 1978 Urban geologic problems associated with the Mixco fault zone: *Intl. Symp. 1976 Guatemala earthquake*, vol. 1, (n.p., approx. 384-402), Guatemala City.
- 1979 The characteristics of ground breakage associated with an active normal fault, Mixco to Guatemala City, Guatemala, C.A. (abs.): *GSA Abs. Prog.* 11, 3, 69-70.

BONILLA, M., BONIS, S., WIDHELM, S. [BILODEAU] (1976)

- BIND, J., COOKE, R.
- 1978 The occurrence in Panama of two types of paleo-Indian projectile points, in Bryan, A., ed., *Early man in America; from a Circum-Pacific perspective*: Am. Mus. Nat. Hist. New York, Occas. Pap. Dep. Anthropol. no. 1, 263-272.
- BINFORD, M.W.
- 1983 Paleolimnology of the Petén Lake district, Guatemala, I. Erosion and deposition of inorganic sediment as inferred from granulometry: *Hydrobiologia* 103, 199-203.
- DEEVEY, E.S. Jr., BRENNER, M., BINFORD, M.W. (1983)
- BIRNIE, R.W.
- 1971 *Infrared radiation thermometry of Central American volcanoes*: MA Thesis, Dartmouth College, 120p.
- 1971 Infrared radiation thermometry of Central American volcanoes (abs.): *EOS* 52, 4, 383.
- 1973 Infrared radiation thermometry of Guatemala volcanoes: *Bull. Volc.* 37, 1, 1-36.
- 1977 The Guatemalan earthquake; February 4, 1976: *Explorers Journal* 55, 3, 114-118.
- BIRNIE, R.W., LANGE, I.M.
- 1973 IR thermal anomalies associated with Guatemalan volcanoes (abs.): *EOS* 54, 4, 511.
- BISHOP, W.
- 1980 Petroleum geology of northern Central America: *Jour. Petroleum Geol.* 3, 1, 3-59.
- BLANCHET, R.
- AUBOUIN, J., BLANCHET, R., TARDY, M. (1976)
- BLOUNT, D.N.
- 1967 *Geology of the Chiantla quadrangle, Guatemala*: Ph.D. Thesis, Louisiana State Univ., 129p. (Dissert. Abs. Sec. B, 28, 5, 1986B).
- 1967 Road log (Guía del trayecto): Huehuetenango to Altos Cuchumatanes, in Bonis, S., ed., *Excursion Guidebook for Guatemala*, 1967 Ann. Mtg. Geological Society of America: IGN, Guatemala Bol. Geol. 4, p.11-17; 47-57. (English and Spanish)

- BLOUNT, D.N. (cont.)
- 1968 *Mapa geológico del cuadrángulo Chiantla*: IGN, Guatemala, 1:50,000.
- 1969 Stratigraphy and petrology of the Chiantla area, Guatemala, in *Trabajos técnicos presentados en la Segunda Reunión de Geólogos de América Central*, ICAITI Pub. Geol. 2, 67-72.
- ANDERSON, T.H., BURKART, B., CLEMONS, R.E., BOHNENBERGER, O.H., BLOUNT, D.N. (1973)
- BOHNENBERGER, O.H., BLOUNT, D.N. (1966)
- BLOUNT, D.N., MOORE, C.H. Jr.
- 1969 Depositional and non-depositional carbonate breccias, Chiantla quadrangle, Guatemala: *GSA Bull.* 80, 3, 429-442.
- BLUNDELL, D.J.
- 1977 Earthquake prediction lessons from Guatemala: *Disasters* 1, 2, 79-80.
- BOGGS, S.H.
- CADWELL, H.H., BOGGS, S.H., STIPP, J.J. (1975)
- BOHNENBERGER, O.H.
- 1966 Nomenclatura de las capas Santa Rosa en Guatemala, en *Trabajos técnicos presentados en la Primera Reunión de Geólogos de América Central*: ICAITI Pub. Geol. 1, 47-51.
- 1967 Road log (Guía del trayecto): Lake Atitlán-Guatemala City, in Bonis, S., ed., *Excursion Guidebook for Guatemala*, 1967 Ann. Mtg. Geological Society of America: IGN, Guatemala Bol. Geol. 4, p.25-30; 63-68. (English and Spanish)
- 1969 Los focos eruptivos Cuaternarios de Guatemala: *ICAITI Pub. Geol.* 2, 23-24.
- 1978 Data sheets of the post-Miocene volcanoes of the world, sheet no. 3, Central America, world volcanological map: IAVCEI, Rome.
- ANDERSON, T.H., BURKART, B., CLEMONS, R.E., BOHNENBERGER, O.H., BLOUNT, D.N. (1973)
- BONIS, S., BOHNENBERGER, O.H., DENGÖ, G. (1970)
- BONIS, S., BOHNENBERGER, O.H., STOIBER, R.E., DECKER, R. (1966)

- BOHNENBERGER, O.H. (cont.)
- CLEMONS, R.E., ANDERSON, T.H., BOHNENBERGER, O.H., BURKART, B. (1974)
- DENGO, G., BOHNENBERGER, O. (1969, 1974)
- DENGO, G., BOHNENBERGER, O., BONIS, S. (1970)
- DENGO, G., LEVY, E., BOHNENBERGER, O., CABALLEROS, R. (1969)
- BOHNENBERGER, O.H., BENGOCHEA, A., *et al.*
- 1969 Report on active volcanoes in Central America during 1957-1965: *Bull. Volc. Eruptions* 9, 1, 2-19, Tokyo.
- BOHNENBERGER, O.H., BLOUNT, D.N.
- 1966 Libreto guía de la excursión "A", en *Libreto guía de las excursiones*, Segunda Reunión de Geólogos de América Central: Guatemala, IGN, Guatemala, p.4-19.
- BOHNENBERGER, O.H., BONIS, S.
- 1976 Reactivated secondary faulting in the Guatemala Graben, 1976 Guatemala earthquake (abs.): *EOS* 57, 12, 949.
- BOHNENBERGER, O.H., BONIS, S., (compilers)
- 1976 *Fracture map, earthquakes of February, 1976, Guatemala valley: (Mapa de fracturas, sismos de febrero 1976, Valle de Guatemala)*, Sociedad Geológica de Guatemala: IGN, Guatemala, 1:25,000.
- BOHNENBERGER, O.H., DENGO, G.
- 1978 Coal resources in Central America, in *Coal resources of the Americas: Selected papers*, GSA Spec. Pap. 179, 65-71.
- BOLANDER, R.J.
- 1969 *A gravimetric study of a portion of the Polochic fault zone near Huehuetenango, Guatemala, C.A.*: MS Thesis, Louisiana State Univ.
- BOLD, W.A. van den
- 1966 Ostracode zones in the Caribbean Miocene: *AAPG Bull.* 50, 5, 1029-1031.
- 1969 Estado de nuestro conocimiento de los ostrácodos fósiles de América Central: *ICAITI Pub. Geol.* 2, 51-53.
- 1970 The genus Costa (Ostracoda) in the upper Cenozoic of the Caribbean region: *Micropaleontology* 16, 1, 61-75.

BOLD, W.A. van den (cont.)

- 1971 Ostracodes association, salinity and depth of deposition in the Neogene of the Caribbean region: *Bull. Centre Recherche SNPA-Pau* 5, 449-460.
- 1972 Contribution of Ostracoda to the correlation of Neogene formations of the Caribbean region: *Carib. Geol. Conf.* 6, Caracas, 485-490.
- 1974 Ostracode associations in the Caribbean Neogene, in Jung, P., ed., *Contributions to the geology and paleobiology of the Caribbean and adjacent region*: Verhandlungen der Naturforschenden Gesellschaft in Basle 84, 1, 214-221.
- 1976 Ostracode correlation of brackish-water beds in the Caribbean Neogene: *Carib. Geol. Conf.* 7, 169-175.
- 1976 Distribution of species of the tribe *Cyprideidimi* (*Ostracoda, Cytherideidae*) in the Neogene of the Caribbean: *Micropaleontology* 72, 1, 1-43.
- 1977 Cenozoic marine Ostracoda of the South Atlantic, in Swain, F.M., ed., *Stratigraphic micropaleontology of Atlantic basin and Borderlands*: Developments in paleontology and stratigraphy 6, Elsevier, 495-519.
- 1978 Distribution of Tertiary and Quaternary Ostracoda in Central America and Mexico: *Inst. Geol. Univ. Nac. Autón. México. Bol.* 101, 114-137.

BOLLINGER, G.A.

LANGER, C.J., BOLLINGER, G.A. (1979)

LANGER, C.J., BOLLINGER, G.A., HENRISEY, R. (1978)

BONILLA, H.

- 1978 Evaluación y estimación de costos de los daños ocasionados por el terremoto del 4 de febrero de 1976, en las viviendas construidas bajo aseguramiento del F.H.A.: *Intl. Symp. 1976 Guatemala earthquake*, vol. 1, (n.p., approx. 825-842), Guatemala City.

BONILLA, M.

PLAFKER, G., BONILLA, M., BONIS, S. (1976)

PLAFKER, G., SHARP, R.V., BUCKNAM, R.C., BONIS, S., BONILLA, M. (1976)

- BONILLA, M., BONIS, S., WIDHELM, S.
- 1976 Secondary faulting associated with the February 1976 Guatemala earthquake (abs.): *EOS* 57, 12, 949.
- BONIS, S.
- 1966 Resumen de la geología regional de Guatemala: en *Libreto guía de las excursiones*, Segunda Reunión de Geólogos de América Central: IGN, Guatemala, p. 1-3.
- 1966 Volcanic geology of the Quezaltenango region, Guatemala (abs.): *GSA Spec. Pap.* 87, p.241.
- 1967 (Editor), Excursion Guidebook for Guatemala (*Libreto guía de la excursión*): Annual Meeting of the Geological Society of America, *IGN, Guatemala Bol. Geol.* 4, 71p. (English and Spanish)
- 1967 Road log (Guía del trayecto): Huehuetenango-Lake Atitlán, in Bonis, S., ed., *Excursion Guidebook for Guatemala*, 1967 Annual Meeting of the Geological Society of America: IGN, Guatemala *Bol. Geol.* 4, p.18-24; 55-62. (English and Spanish)
- 1967 Summary of the regional geology of Guatemala, in Bonis, S., ed., *Excursion Guidebook for Guatemala*, Annual Meeting of the Geological Society of America: IGN, Guatemala *Geol. Bol.* 4, p.1-3; 37-39. (English and Spanish)
- 1967 Guatemala: *Geotimes*, 12, 6, 15.
- 1967 *Geologic reconnaissance of the Alta Verapaz fold belt, Guatemala*: Ph.D. Thesis, Louisiana State University, 146p. (Dissert. Abs., Sec. B, 28, 2, 739B).
- 1967 *Mapa de reconocimiento geológico del cinturón plegado de Alta Verapaz, Guatemala (Geologic reconnaissance map of the Alta Verapaz fold belt, Guatemala)*: IGN, Guatemala, 1:125,000.
- 1967 Age of Guatemalan serpentine (abs.): *GSA Spec. Pap.* 115, p.18.
- 1967 A basic critique of foreign assistance programs in light of Guatemala's present water needs: *International Conference on Water for Peace*, Washington, D.C., vol. 5, p.1057-1061, U.S. Government Printing Office.

BONIS, S. (cont.)

- 1968 Evidence for a Paleozoic Cayman Trough (abs.): *GSA Spec. Pap.* 121, p. 32.
- 1969 A summary of the geology of Guatemala, *in Trabajos técnicos presentados en la Segunda Reunión de Geólogos de América Central*: ICAITI Pub. Geol. 2, p.76-80.
- 1971 The new geologic map of Guatemala (abs.): *Tercera Reunión de Geólogos de América Central*, Resúmenes, Costa Rica, p.19.
- 1972 Recommendations for the refocusing of international assistance programs in natural resources: *Intl. Geol. Congr.* 24, Symposium 2, Montreal, p.61-66.
- 1975 Guatemala, *in* Fairbridge, R.W., ed., *The Encyclopedia of World Geology, Part I: Western Hemisphere*: Stroudsburg, Pa., Dowden, Hutchinson and Ross, p.305-309.
- 1976 Volcanic risks and studies in Guatemala, Primer seminario sobre riesgos sísmicos y vulcanológicos de Latinoamérica: *Revista Geofísica*, Inst. Panamericano Geog. Hist., México, vol. 5, p.83-85.
- 1976 A preliminary account of the February 1976 earthquake, Guatemala (abs.): *EOS* 57, 8, 598.
- 1976 El sismo del 4 de febrero, 1976, Guatemala: Observaciones preliminares (abs.): *Tercer Congreso Latinoamericano de Geología*, México, Resúmenes, p.13.
- 1976 The 1974 eruption of Volcán de Fuego, Guatemala (abs.): *EOS* 57, 4, 345.
- 1977 Intensity anomaly in Yucatán, México: Guatemala earthquake of Feb. 4, 1976 (abs.): *Primer Congreso Ibero-Latinoamericano de Geofísica*, Caracas, Programa y Resúmenes, p.31.
- 1978 Unheeded geological warnings from the 1976 Guatemala earthquake: *Intl. Symp. 1976 Guatemala earthquake*, vol. 1, (n.p., approx. 403-407), Guatemala City.

BONIS, S. (cont.)

- 1982 Reconnaissance base mapping techniques in rain forest areas, in Laming, D.S., Gibbs, A.K., eds., *Hidden wealth, mineral exploration techniques in tropical forest areas*: Assoc. Geoscientists for Intl. Development (AGID) Report 7, 46-49.
- 1982 Selected resources problems of underdeveloped nations and suggested solutions, in Whitmore, F., Williams, M., eds., *Resources for the 21st century, Proceedings of the International Centennial Symposium of the U.S. Geological Survey*: USGS Prof. Pap. 1193, p.33-37.
- BOHNENBERGER, O.H., BONIS, S. (1976)
- BOHNENBERGER, O.H., BONIS, S., (compilers) (1976)
- BONILLA, M., BONIS, S., WIDHELM, S. (1976)
- BOOTHBY, D., GREER, E.W. Jr., DAVIES, D.K., BONIS, S. (1978)
- DAVIES, D.K., ALMON, W.R., BONIS, S., HUNTER, B.E. (1979)
- DAVIES, D.K., BONIS, S. (1976, 1977)
- DAVIES, D.K., BONIS, S., HUNTER, B.E. (1976)
- DAVIES, D.K., COMBS, M.J., QUEARRY, M.W., BONIS, S. (1975)
- DAVIES, D.K., QUEARRY, M.W., BONIS, S. (1976, 1978)
- DAVIES, D.K., VESSELL, R.K., MILES, R.C., FOLEY, M.G., BONIS, S. (1978)
- DENGO, G., BOHNENBERGER, O.H., BONIS, S. (1970)
- ESPINOSA, A.F., HUSID, R., BONIS, S. (1977)
- FOLEY, M.G., VESSELL, R.K., DAVIES, D.K., BONIS, S. (1978)
- HEBBERGER, J.J., DAVIES, D.K., BONIS, S. (1977)
- HUNTER, B.E., DAVIES, D.K., BONIS, S. (1976)
- KRINITSKY, E., BONIS, S. (1976)
- MILES, R.C., DAVIES, D.K., BONIS, S. (1977)
- PLAFKER, G., BONILLA, M., BONIS, S. (1976)
- PLAFKER, G., SHARP, R.V., BUCKNAM, R.C., BONIS, S., BONILLA, M. (1976)
- ROSE, W.I. Jr., ANDERSON, A.T. Jr., WOODRUFF, L.G., BONIS, S. (1978)
- ROSE, W.I. Jr., BONIS, S., STOIBER, R.E., KELLER, M., BICKFORD, T. (1973)
- ROSE, W.I. Jr., PEARSON, T., BONIS, S. (1977)
- ROSE, W.I. Jr., STOIBER, R.E., BONIS, S. (1970)
- ROSE, W.I. Jr., WOODRUFF, L.G., BONIS, S. (1976)
- STOIBER, R.E., ROSE, W.I. Jr., BONIS, S. (1970)
- VESSELL, R.K., DAVIES, D.K., FOLEY, M.G., BONIS, S. (1977)
- BONIS, S., BOHNENBERGER, O.H., DENGO, G.
- 1970 *Mapa geológico de la República de Guatemala (Geologic map of the Republic of Guatemala)*: IGN, Guatemala, 1:500,000.

- BONIS, S., BOHNENBERGER, O.H., STOIBER, R.E., DECKER, R.W.
1966 Age of pumice deposits in Guatemala: *GSA Bull.* 77, 211-212.
- BONIS, S., SALAZAR, O.D.
1973 The 1971 and 1973 eruptions of Volcán Fuego, Guatemala, and some socio-economic considerations for the volcanologist: *Bull. Volc.* 37, 3, 394-400.
- BOOM, G., Van Den
1972 Petrofazielle Gliederung des metamorphen Grundgebirges in der Sierra de Chuacús, Guatemala: *Beih. Geol. Jahrb.*, 122, 5-49.
- BOOM, G., Van Den, MÜLLER, A., NICOLAUS, H.
1981 *Mapa geológico del cuadrángulo Cubulco*: IGN, Guatemala, 1:50,000.
- BOOM, G., Van Den, MÜLLER, A., NICOLAUS, H., PAULSEN, S.
1971 *Mapa geológico general, Baja Verapaz y parte sur de la Alta Verapaz, Guatemala*: Bundesanstalt für Bodenforschung, Hanover, 1:125,000.
- BOON, M.
BROUGHTON, P., BOON, M. (1975)
- BOORE, D.M.
1977 Seismology: *Geotimes* 22, 40-41.
- BOOTHBY, D., GREER, E.W. Jr., DAVIES, D.K., BONIS, S.
1978 Coastal sedimentation of volcanogenic sands, Guatemala (abs.): *GSA Abs. Prog.* 10, 1, 2.
- BORNHORST, T.J.
HALSOR, S., ROSE, W.I. Jr., BORNHORST, T.J. (1983)
ROSE, W.I. Jr., BORNHORST, T.J. (1981, 1982)
ROSE, W.I. Jr., BORNHORST, T.J., DREXLER, J.W. (1982)
ROSE, W.I. Jr., BORNHORST, T.J., WUNDERMAN, R.L. (1981)
- BORNHORST, T.J., ROSE, W.I. Jr.
1981 Multiple occurrences of Quaternary basalt-rhyolite mixed tephra in Guatemala (abs.): *EOS* 62, 45, 1085.
- BORNHORST, T.J., ROSE, W.I. Jr., CHESNER, C.A.
1982 Quaternary Barahona caldera complex, Guatemala (abs.): *EOS* 63, 45, 1155.

- BORNHORST, T.J., ROSE, W.I. Jr., HALSOR, S.
- 1983 Crustal evolution of calc-alkalic magmas along Guatemala's convergent plate boundary (abs.): *GSA Abs. Prog.* 15, 6, 530.
- BOSC, E.
- 1971 *Geology of the San Agustín Acasaguastlán quadrangle and the northeastern part of the El Progreso quadrangle*: Ph.D. Thesis, Rice Univ., 131p. (Dissert. Abs. 32, 4, 2229 B).
- 1979 *Mapa geológico del cuadrángulo San Agustín Acasaguastlán*: IGN, Guatemala, 1:50,000.
- BOSSONEY, C., PRATER, E., et al.
- 1981 Earthquake resistance of a rockfill dam: *Intl. Conf. recent advances in geotechnical earthquake engineering and soil dynamics*, vol. 1, Univ. Missouri, Rolla, 441-445.
- BOUCHON, M.
- 1980 The motion of the ground during an earthquake. 1. The case of a strike slip fault: *Jour. Geophys. Res.* 85, 356-366.
- BOURGOIS, J.
- AUBOUIN, J., BOURGOIS, J., von HUENE, R., AZÉMA, J. (1982)
- BOWIN, C.O.
- 1968 Geophysical study of the Cayman Trough: *Jour. Geophys. Res.* 73, 16, 5159-5173.
- BOWLES, F.A., JACK, R.N., CARMICHAEL, J.S.E.
- 1973 Investigation of deep-sea volcanic ash layers from equatorial Pacific cores: *GSA Bull.* 74, 2371-2388.
- BOYD, A.
- ANDERSON, T.H., BOYD, A., DAVIS, G.H. (1967)
- BOYD, A.L.
- 1966 *Geology of the western third of the La Democracia quadrangle, Guatemala*: MA Thesis, Univ. Texas at Austin, 79p.
- BRADFORD, D.E.
- SIESSER, W.G., BRADFORD, D.E., COLLINS, E.M. (1968)
- BRADFORD, D.E., COLLINS, E.M., SIESSER, W.G.
- 1968 *Mapa geológico del cuadrángulo Cuilco*: IGN, Guatemala, 1:50,000.

- BRADFORD, D.E., COLLINS, E.M., SIESSER, W.G., KESLER, S.E.
1968 Plutonic and metamorphic rocks of western Guatemala - a preliminary report (abs.): *GSA Spec. Pap.* 115, 21-22.
- BRANDER, J.
1976 When do earthquakes occur?: *New Scientist* 69, 342-344.
- BRATTON, G.
STOIBER, R.E., BRATTON, G. (1978)
STOIBER, R.E., MALONE, G.C., BRATTON, G. (1978)
- BRENNER, M.
1978 *Paleolimnological assessment of human disturbance in the drainage basins of three northern Guatemalan lakes*: MS Thesis, Univ. Florida.
1983 Paleolimnology of the Petén Lake district, Guatemala, II. Mayan population density and sediment and nutrient loading of Lake Quexil: *Hydrobiologia* 103, 205-210.
1983 *Paleolimnology of the Maya region*: Ph.D. Thesis, Univ. Florida, 261p.
- DEEVEY, E.S. Jr., BRENNER, M., BINFORD, M.W. (1983)
DEEVEY, E.S. Jr., BRENNER, M., FLANNERY, M.S., YEZDANI, G.H. (1980)
- BREWER, P.
ANDERSON, R., BACON, M., BREWER, P. (1983)
- BREZONIK, P.L., FOX, J.L.
1974 The limnology of selected Guatemalan lakes: *Hydrobiologia* 45, 467-487.
- BRIDGE, D.
SIMKIN, T., SIEBERT, L., McCLELLAND, L., BRIDGE, D., NEWHALL, C.G., LATTER, J. (1981)
- BROOKS, H.K., COOLEY, J., DEEVEY, E.S. Jr., et al.
1973 Lakes Yaxhá and Sacnab, twin basins in the central Maya area of Guatemala (abs.): *Congr. Int. Union Quaternary Res.* 9, 43-44.
- BROUGHTON, P., BOON, M.
1975 The Río Huista karst cave survey; western Guatemala: *Explorers Journal* 53, 1, 8-15.
- BROUSSE, R.
BARDINTZEFF, J.M., BROUSSE, R., CLOCHIATTI, R., WEISS, J. (1980)

- BROWN, L., KLEIN, J., MIDDLETON, R., SACKS, I., TERA, F.
1982 Be in island-arc volcanoes and implications for subduction: *Nature* 299, 5885, 718-720.
- 1982 Beryllium-10 as a geochemical and geophysical probe: *Carnegie Inst. Washington Yearbook* 81, 464-467.
- BROWN, R.H.
LAMARRE, A.L., LAMARRE, R.A., LOUCKS, T.A., BROWN, R.H. (1971)
- BROWN, R.H., LAMARRE, A.L., LAMARRE, R.A., LOUCKS, T.A.
1971 *Geology of the eastern portion of the San José Pinula quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 66p.
- BROWN, W.E., Jr.
ADAMS, R.E.W., BROWN, W.E., Jr., CULBERT, T.P. (1981)
- BROWNING, J.M.
1980 Facts and principles of Latin American oil occurrence: *Can. Soc. Petrol. Geol. Mem.* 6, 823-855.
- BRUCE, R.J.
DEWEY, J.W., BRUCE, R.J. (1976)
- BRYANT, W.R.
ANTOINE, J.W., BRYANT, W.R. (1969)
KORNICKER, L.S., BRYANT, W.R. (1969)
- BUCKNAM, R.C.
1978 *Documentation for alignment arrays, Motagua fault, Guatemala*: USGS Open-File Report 78-880, 21p.
PLAFKER, G., SHARP, R.V., BUCKNAM, R.C., BONIS, S., BONILLA, M. (1976)
- BUCKNAM, R.C., PLAFKER, G., SHARP, R.V.
1978 Fault movement (afterslip) following the Guatemala earthquake of February 4, 1976: *Geology* 6, 3, 170-173.
1978 Surface faulting and afterslip along the Motagua fault in Guatemala: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 1, (n.p., approx. 228-246), Guatemala City.
- BUCKNAM, R.C., PLAFKER, G., SHARP, R.V., BONIS, S.
1976 Surface displacement in the Motagua fault zone during the 4 February, 1976 Guatemala earthquake (abs.): *EOS* 57, 12, 949.

- BUELL, W.C., STOIBER, R.E.
1976 Eruption of Volcán Fuego, October 14, 1974: *Bull. Volc.* 38, 4, 863-869.
- BUFFLER, R.T.
1982 *Seismic stratigraphy and geologic history of the deep Gulf of Mexico basin*: New Orleans Geol. Soc., (Short course).
- LADD, J.W., BUFFLER, R.T., WATKINS, J.S., WORZEL, J. (1976)
McMILLEN, K.J., BUFFLER, R.T., MOORE, J.C., et al. (1978)
SHIPLEY, T.H., LADD, J.W., BUFFLER, R.T., WATKINS, J.S. (1982)
- BUIS, O.J.
LEIGH, R.A., BUIS, O.J., HALL, W.K. (1976)
- BUIS, O.J., EVENSON, R.E.
1977 Drilling underway on big Guatemala structure: *Oil and Gas Jour.* 75, 21, 96-97.
- BUKRY, D.
1982 Cenozoic silicoflagellates from offshore Guatemala: DSDP Site 495: *DSDP* 67, p.425-445.
- BUOL, S.W.
CALVERT, C.S., WEED, S.B., BUOL, S.W. (1979)
- BURKART, B.
1966 *Mapa geológico del cuadrángulo Cerro Montecristo*: IGN, Guatemala, 1:50,000.
1966 *Mapa geológico del cuadrángulo Chanmagua*: IGN, Guatemala, 1:50,000.
1966 *Mapa geológico del cuadrángulo Esquipulas*: IGN, Guatemala, 1:50,000.
1966 Structure and stratigraphy in the Esquipulas area of southeastern Guatemala (abs.): *GSA Spec. Pap.* 87, 23-24.
1978 Offset across the Polochic fault of Guatemala and Chiapas, Mexico: *Geology* 6, 6, 328-332.
1979 Pre-strike slip positions of Polochic fault blocks as determined from geomorphic evidence in Guatemala (abs.): *AAPG Bull.* 63, 3, 426-427.

BURKART, B. (cont.)

- 1980 Plate tectonic significance of the Polochic fault and reconstruction of northern Central America prior to measured displacement (abs.): *GSA Abs. Prog.* 12, 7, 395.
- CLEMONS, R.E., ANDERSON, T.H., BOHNENBERGER, O.H., BURKART, B. (1974)
- ANDERSON, T.H., BURKART, B., CLEMONS, R.E., BOHNENBERGER, O.H., BLOUNT, D.N. (1973)
- CLEMONS, R.E., ANDERSON, T.H., BURKART, B. (1971)
- CLEMONS, R.E., BURKART, B. (1969, 1971)
- DONNELLY, T.W., BURKART, B., CRANE, D. (1968)
- LINDSAY, D.D., BURKART, B., FISHER, J.F. (1975)
- LITKE, G.R., BURKART, B. (1975)
- MARCUS, D.L., BURKART, B., FISCHER, J.F. (1975)
- BURKART, B., CLEMONS, R.E.
- 1968 Paleogeographic setting of the Todos Santos Formation, northwestern Guatemala (abs.): *GSA Spec. Pap.* 121, 42-43.
- 1972 Late Paleozoic orogeny in NW Guatemala: *Carib. Geol. Conf.* 6, Venezuela, 210-213.
- 1976 *Mapa geológico del cuadrángulo San Miguel Acatán*: IGN, Guatemala, 1:50,000.
- 1976 *Mapa geológico del cuadrángulo Todos Santos Cuchumatán*: IGN, Guatemala, 1:50,000.
- BURKART, B., CLEMONS, R.E., CRANE, D.
- 1973 Mesozoic and Cenozoic stratigraphy of southeastern Guatemala: *AAPG Bull.* 57, 1, 63-73.
- BURKART, B., CLEMONS, R.E., GODOY, J.
- 1969 *Mapa geológico del cuadrángulo Chiquimula*: IGN, Guatemala, 1:250,000.
- BURKART, B., MORENO, G.
- 1983 North American - Caribbean plate boundary in southern Chiapas, Mexico: further evidence of Neogene activity (abs.): *Carib. Geol. Conf.* 10 (Cartagena), p.28.
- BURKE, K., GREPPI, J., SENGOR, A.M.
- 1978 Tectonic style of the northern boundary of the Caribbean plate (abs.): *EOS* 59, 12, 1203.

BUTTERLIN, J.

- 1972 Posición de la región del Caribe en las estructuras geológicas americanas, según los datos más recientes: *Soc. Geol. Mex. Bol.* 33, 2, 5-42.
- 1977 *Géologie structurale de la région des Caraïbes (Mexique, Amérique Centrale, Antilles, Cordillère Caraïbe)*: Paris, Masson, 259p.

C

CABALLEROS, R.

DENGO, G., LEVY, E., BOHNENBERGER, O.H., CABALLEROS, R. (1969)

CABRERA, J.

de la PEA, G., CABRERA, J. (1982)

CADET, J., *et al.*

1982 Middle America Neogene explosive volcanism and ash layers; evidence from the Middle America Trench transect: *DSDP* 67, p.475-491.

CADLE, R.D.

LAZRUS, A.L., CADLE, R.D., *et al.* (1979, 1979)

LAZRUS, A.L., HUEBERT, B.J., CADLE, R.D., ROSE, W.I. Jr. (1978)

ROSE, W.I. Jr., CADLE, R.D., HEIDT, L., *et al.* (1978, 1980)

ROSE, W.I. Jr., CADLE, R.D., LAZRUS, A.L., *et al.* (1979)

ROSE, W.I. Jr., CHUAN, R., CADLE, R.D., WOODS, D. (1980)

ROSE, W.I. Jr., CHUAN, R., WOODS, D., CADLE, R.D. (1978)

CADLE, R.D., FERNALD, F., FRUSH, C.

1977 Combined use of lidar and numerical diffusion models to estimate the quantity and dispersion of volcanic eruption clouds in the stratosphere: Volcán Fuego, 1974 and Augustine 1976: *Jour. Geophys. Res.* 82, 1783-1786.

CADLE, R.D., HEIDT, L.

1980 A comparison of constituents of Mount St. Helens eruption clouds with those of some other volcanoes: *NASA Conf. Pub.* 2240, 155-159.

1980 Gas chromatographic determination of some constituents of volcanic gases (abs.): *EOS* 61, 46, 1153.

CADLE, R.D., HUEBERT, B.J., LAZRUS, A.L., ROSE, W.I. Jr.

1978 Implications of studies of Guatemalan volcanoes with regard to stratospheric trace constituents (abs.): *EOS* 59, 12, 1223.

CADLE, R.D., KIANG, C., LOUIS, J.

1976 The global scale dispersion of the eruption clouds from major volcanic eruptions: *Jour. Geophys. Res.* 81, 18, 3125-3132.

- CADLE, R.D., LAZRUS, A.L., *et al.*
1979 Atmospheric implications of studies of Central American volcanic eruption clouds: *Jour. Geophys. Res.* 84, 11, 6961-6968.
- CADWELL, H.H., BOGGS, S.H., STIPP, J.J.
1975 Radiocarbon dating of the pot-belly statuary of El Salvador and Guatemala (abs.): *Florida Science* 38, 16.
- CALVERT, C.S., WEED, S.B., BUOL, S.W.
1979 Estimation of amorphous material, 1:1 type layer silicates, and gibbsite dissolved in hot alkali treatment of soil clay: *Soil Sci. Soc. Am. Jour.* 143, 4, 778-781.
- CANO, J.H.
1976 El terremoto de Guatemala del 4 de Febrero de 1976; descripción y análisis de los daños provocados en las construcciones: *Jornadas Chilenas Sismol. Ing. Antisísmicas*, no. 2, v. II, D5.1-D5.13, Santiago, Chile.
1977 Guatemala earthquake of February 4th, 1976; description and analysis of damages caused on buildings: *6th. World Conf. Earthquake Eng., Proc. (III)* no. 6, p.299-303, New Delhi.
- CAPPA, G.
SIFFRE, M., CAPPA, G. (1981)
- CARDWELL, R.K.
KARIG, D.E., CARDWELL, R.K., *et al.* (1978)
- CARMICHAEL, J.S.E.
BOWLES, F.A., JACK, R.N., CARMICHAEL, J.S.E. (1973)
- CARPENTER, M.A.
1978 Kinetic control of ordering and exsolution in omphacite: *Contrib. Mineral. Petrol.* 67, 1, 17-24.
1979 Omphacites from Greece, Turkey and Guatemala; composition limits of cation ordering: *Am. Mineral.* 64, 1-2, 102-108.
- CARR, M.J.
1974 *Tectonics of the Pacific margin of northern Central America*: Ph.D. Thesis, Dartmouth College, 159p. (Dissert. Abs. 35, 4, 173-13).
1976 Underthrusting and Quaternary faulting in northern Central America: *GSA Bull.* 87, 825-829.

CARR, M.J. (cont.)

- 1976 Earthquakes along the inclined seismic zone and eruptions of Fuego Volcano in Guatemala (abs.): *EOS* 57, 4, 346.
- 1977 Volcanic activity and great earthquakes at convergent plate margins: *Science* 197, 655-657.
- 1978 Magma type and structure of the inclined seismic zone in the Central American arc (abs.): *GSA Abs. Prog.* 10, 3, 98.
- 1982 Crustal influence on magmatic diversity along the Central American volcanic front (abs.): *EOS* 63, p.460.
- 1983 Nests of intermediate depth (70-160 km) earthquakes adjacent to active volcanoes during 1963-1982: *Jour. Volc. Geotherm. Res.* 19, 349-365.
- 1983 Volumes, spacings and incompatible element contents of volcanoes in Central America (abs.): *EOS* 64, p.892.

STOIBER, R.E., CARR, M.J. (1971, 1971, 1973, 1976)

CARR, M.J., COX, R.E., KNAPP, J.C., PINEO, C.C., ROSS, J.J.

- 1969 *Geology of the southwestern portion of the San José Pinula quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 74p.

CARR, M.J., ROSE, W.I. Jr., MAYFIELD, D.G.

- 1979 Potassium content of lavas and depth to the seismic zone in Central America: *Jour. Volc. Geotherm. Res.* 5, 387-401.

CARR, M.J., ROSE, W.I. Jr., STOIBER, R.E.

- 1982 Central America, in Thorpe, R., ed., *Andesites: Orogenic andesites and related rocks*: Chichester, J. Wiley & Sons, p. 149-166.

CARR, M.J., STOIBER, R.E.

- 1973 Intermediate depth earthquakes and volcanic eruptions in Central America, 1961-1972: *Bull. Volc.* 37, 3, 326-337.
- 1974 Tectonics of the western margin of the Caribbean plate (abs.): *GSA Abs. Prog.* 6, 7, 682-683.
- 1975 Coincidence of active faults and population centers in Central America (abs.): *EOS* 56, 6, 449.

- CARR, M.J., STOIBER, R.E. (cont.)
- 1977 Geologic setting of some destructive earthquakes in Central America: *GSA Bull.* 88, 151-156.
- 1978 Tectonic setting of explosive volcanoes in the circum-Pacific region (abs.): *GSA Abs. Prog.* 10, 3, 377.
- CARR, M.J., STOIBER, R.E., DRAKE, C.L.
- 1974 The segmented nature of some continental margins, in Burke, C.A., Drake, C.L., eds., *The Geology of Continental Margins*: New York, Springer- Verlag, p.105-114.
- CARRIVEAU, G.W., NIEVENS, M.
- 1979 Guatemalan obsidian source characterization by thermoluminescence, in Hackens, T., Aitken, M.S., Mejkah, V., eds., *A special seminar on thermoluminescence dating*: PACT, vol. 3, part 2, p. 506-509.
- CARSON, C.D., KUNZE, G.W.
- 1970 New occurrences of tabular halloysite: *Soil Sci. Soc. Am. Proc.* 34, 3, 538-540.
- CARTER, J.
- AMBOSE, E., HUSSONG, D., CARTER, J. (1981)
- CASE, J.E.
- 1975 Geologic framework of the Caribbean region, in *Geology, Geophysics and Resources of the Caribbean, International Decade of Oceanographic Exploration*, UNESCO: Mayaguez, Univ. Puerto Rico Press, p.3-26.
- 1981 *Crustal setting of mafic and ultramafic rocks and associated ore deposits of the Caribbean Region*: USGS Open-File Report 80-304, 95p.
- MONGES CALDERA, J., JACHENS, R., ANDRADE, D., CASE, J.E. (1976)
- CASE, J.E., DONNELLY, T.W.
- 1976 Gravitational evidence for crustal structure in central Guatemala (abs.): *EOS* 57, 12, 948-949.
- CASE, J.E., HOLCOMBE, T.L.
- 1980 *Geologic-tectonic map of the Caribbean region*: USGS Misc. Invest. Map I-1100, 1:2,500,000.

- CASON, J.H.
1972 *The geochemistry of Lake Izabal, Guatemala*: MS Thesis, Univ. Florida.
- CASTANO, J.C.
1967 *The determination of crustal thickness in Central America from the spectrum of dilatational body waves*: MS Thesis, St. Louis Tech.
- CASTRO, D.
CASTRO, K., CASTRO, D. (1979)
- CASTRO, K., CASTRO, D.
1979 Jade in Central America: *Gems. Miner.* 500, 166278, 11-12, 32-36.
- ČEPEK, P.
1975 Die Kreide-Coccolithen aus der Reference-Lokalitaet der Sepur-Folge bei Lanquin in Guatemala: *Geol. Jahrb. Reihe B.* 14, 87-109.
- CHAMBERLAIN, C.K.
1972 Evolution of the Permian trilobite Anisopyge: *Jour. Paleontol.* 46, 4, 503-508.
- CHAVEZ, D.E.
1980 *Surface wave dispersion in the Great Basin and northern Central America*: MS Thesis, Univ. Nevada, Reno.
- EGGERS, A.A., CHAVEZ, D.E. (1978, 1979)
- CHAVEZ, D.E., PRIESTLY, K.F.
1978 Crustal structure of the Guatemalan volcanic arc: *Earthquake notes*, SSA, Eastern Section 49, 4, 29.
- CHEMERYS, J.C.
1983 Comparison of analytical methods for the determination of silica in geothermal waters: *Jour. Volc. Geotherm. Res.* 16, 1-2, 57-63.
- CHESNER, C.A.
1982 *Geochemistry and evolution of the Fuego volcanic complex, Guatemala; constraints on magma chambers at Fuego and other nearby volcanoes*: MS Thesis, Michigan Technol. Univ., 69p. (Abs.: *EOS* 63, 45, 1155).
- BORNHORST, T.J., ROSE, W.I. Jr., CHESNER, C.A. (1982)

- CHOUET, B.
 REASENBURG, P., CHOUET, B., WOULFF, G. (1973)
- CHUAN, R.
 ROSE, W.I. Jr., CHUAN, R., CADLE, R.D., WOODS, D. (1980)
 ROSE, W.I. Jr., CHUAN, R., WOODS, D., CADLE, R.D. (1978)
 WOODS, D.C., CHUAN, R. (1978)
- CHUAN, R., WOODS, D.
 1980 Comparison of aerosols from eruptions of Santiaguito, Guatemala and St. Helens (abs.): *EOS* 61, 46, 1153.
- CIFUENTES, I.
 WHITE, R.A., SANCHEZ, E., CIFUENTES, I., HARLOW, D.H. (1980)
- CLARK, G.
 HORNE, G. CLARK, G., PUSHKAR, P. (1976)
- CLEARY, J., HALLAGER, H.
 1974 *Geology of the southern portion of the Nueva Santa Rosa quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 53p.
- CLEMONS, R.E.
 1966 *Geology of the Chiquimula quadrangle Guatemala, Central America*: Ph.D. Thesis, Univ. Texas at Austin, 124p. (Dissert. Abs. Sec. B, 27, 7, 2407B-2408B, 1967).
 1966 *Mapa geológico del cuadrángulo Chiquimula*: IGN, Guatemala, 1:50,000.
 1969 Geological history of the Chiquimula region Guatemala, in *Trabajos técnicos presentados en la Segunda Reunión de Geólogos de América Central*: ICAITI Pub. Geol. 2, 72-75.
 1969 Petrography and age of the Chiquimula pluton, Guatemala (abs.): *GSA Spec. Pap.* 121, 390.
- BURKART, B., CLEMONS, R.E. (1968, 1972, 1976, 1976)
 ANDERSON, T.H., BURKART, B., CLEMONS, R.E., BOHNENBERGER, O.H., BLOUNT, D.N. (1973)
 BURKART, B., CLEMONS, R.E., CRANE, D. (1973)
 BURKART, B., CLEMONS, R.E., GODOY, J. (1969)

- CLEMONS, R.E., ANDERSON, T.H., BOHNENBERGER, O.H., BURKART, B.
- 1974 Stratigraphic nomenclature of recognized Paleozoic and Mesozoic rocks of western Guatemala: *AAPG Bull.* 58, 2, 313-320.
- CLEMONS, R.E., ANDERSON, T.H., BURKART, B.
- 1971 Stratigraphy of northwestern Guatemala: *Soc. Geol. Mex. Bol.* 32, 2, 145-158.
- CLEMONS, R.E., BURKART, B.
- 1969 Structure of the western Altos Cuchumatanes Guatemala (abs.): *GSA Spec. Pap.* 121, 56-57.
- 1971 Geology of the western Sierra de los Cuchumatanes, Guatemala: A preliminary report: *Carib. Geol. Conf.* 5, 117-118.
- CLEMONS, R.E., LONG, L.E.
- 1971 Petrologic and Rb/Sr isotopic study of the Chiquimula pluton, southeastern Guatemala: *GSA Bull.* 82, 10, 2729-2740.
- CLOCHIATTI, R.
- BARDINTZEFF, J.M., BROUSSE, R., CLOCHIATTI, R., WEISS, J. (1980)
- CLOHAN, G.M., REYNOLDS, J.C.
- 1977 *Geology of the eastern portion of the Sololá quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 53p.
- CLUFF, L.
- SCHWARTZ, D.P., CLUFF, L., DONNELLY, T.W. (1978)
- CLUFF, L., COPPERSMITH, K., KNUEPFER, P.
- 1982 Assessing degrees of fault activity for seismic microzonation: *Third Intl. earthquake microzonation conference*, 1, 113-118, Seattle, Washington, U.S.A. (U.S. Natl. Sci. Found.).
- COE, W.R.
- STUCKENRATH, R. Jr., COE, W.R., RALPH, E.K. (1966)
- COLLINS, E.M.
- 1966 *Metamorphic and volcanic petrology and structural geology of the Huehuetenango quadrangle, Guatemala*: MS Thesis, Louisiana State Univ., 45p.
- BRADFORD, D.E., COLLINS, E.M., SIESSER, W.G. (1968)
- BRADFORD, D.E., COLLINS, E.M., SIESSER, W.G., KESLER, S.E. (1968)

- COLLINS, E.M. (cont.)
KESLER, S.E., JOSEY, W.L., COLLINS, E.M. (1970)
SIESSER, W.G., BRADFORD, D.E., COLLINS, E.M. (1968)
- COLLINS, E.M., JOSEY, W.L., STEVENS, W.E.
1981 *Mapa geológico del cuadrángulo Huehuetenango*: IGN, Guatemala, 1:50,000.
- COLLINS, E.M., KESLER, S.E.
1969 High temperature telescoped tungsten - antimony mineralization, Guatemala: *Mineralum Deposita* 4, 1, 65-71.
- COMBS, M.J.
1976 *Log-probability plots: are they useless?*: MA Thesis, Univ. Missouri at Columbia, 70p.
- DAVIES, D.K., COMBS, M.J., QUEARRY, M.W., BONIS, S. (1975)
- CONEY, P.J.
DAMON, P.E., CONEY, P.J. (1983)
- CONNAN, J., HUSSLER, G., ALBRECHT, P.
1980 Geochemistry of crude oils and crude oil-source rock correlations in four carbonate basins (abs.): *GSA Abs. Prog.* 12, 7, 405.
- CONNAN, J., MASON, J.F.
1981 *Biological markers in crude oils*. Tulsa, PennWell Books, p.48-70.
- COOK, T.D., BALLY, A.W., (eds.)
1975 *Stratigraphic atlas of North and Central America*: Princeton, New Jersey, Princeton University Press, 272p.
- COOKE, R.
BIND, J., COOKE, R. (1978)
- COOLEY, J.
BROOKS, H.K., COOLEY, J., DEEVEY, E.S. Jr., et al. (1973)
- COOPER, J.D.
1976 *Bridge and highway damage resulting from the 1976 Guatemala earthquake*: (FHWA-RD-76-148) Office of Res. Development, Federal Highway Administration, Washington, D.C., 50p.
- COPPERSMITH, K.
CLUFF, L., COPPERSMITH, K., KNUEPFER, P. (1982)

- CORBEL, J., MUXART, R.
1970 Karst des zones tropicales humides: *Annales de Geomorphologie* 14, 441-474.
- COUCH, R., WOODCOCK, S.F.
1981 Gravity and structure of the continental margins of southwestern Mexico and northwestern Guatemala: *Jour. Geophys. Res.* 86, B3, 1829-1840.
- COULBOURN, W.T.
1982 Introduction, summary, and explanatory notes, the Middle America Trench transect: *DSDP* 67, p.5-25.
1982 Stratigraphy and structures of the Middle America Trench: DSDP Leg 67 transect off Guatemala: *DSDP* 67, p.691-706.
- COULBOURN, W.T., HESSE, R., *et al.*
1982 A summary of the sedimentology of Deep Sea Drilling Project Leg 67 sites; the Middle America Trench and slope off Guatemala, an active margin transect: *DSDP* 67, p.759-774.
- COURSAGET, J., LeRUN, J.
1966 Gif-sur-Yvette natural radiocarbon measurements: *Radiocarbon* 8, 128-141.
- COWAN, D.S.
1982 Origin of "vein structure" in slope sediments on the inner slope of the Middle America Trench off Guatemala: *DSDP* 67, p.645-650.
- COWGILL, V.M.
1966 Use of X-ray emission spectroscopy in the chemical analyses of lake sediments, determining 41 elements, in *Developments in applied spectroscopy*: 5th Mid-America Spectroscopy Symp. Proc., p.3-23, New York, Plenum Press.
- COWGILL, V.M., HUTCHINSON, G.E.
1966 The history of the Petenxil basin, in *The history of Laguna de Petenxil, a small lake in northern Guatemala*: Connecticut Acad. Arts and Sci. Mem. 17, 121-126.

COWGILL, V.M., HUTCHINSON, G.E. (cont.)

- 1966 A general account of the basin and the chemistry and mineralogy of the sediment cores, in *The history of Laguna de Petenxil, a small lake in northern Guatemala*: Connecticut Acad. Arts and Sci. Mem. 17, 7-62.
- 1966 La aguada de Santa Ana Vieja - the history of a pond in Guatemala: *Archiv Hydrobiologie* 62, 3, 335-372.
- 1969 A chemical and mineralogical examination of the ceramic sequence from Tikal, El Petén, Guatemala: *Am. Jour. Sci.* 267, 4, 465-477.

COX, M.L.

- 1981 *A study of the massive-bedded tuffs of the Padre Miguel Group, southeastern Guatemala*: MS Thesis, Univ. Texas at Arlington.

COX, R.E.

CARR, M.J., COX, R.E., KNAPP, J.C., PINEO, C.C., ROSS, J.J. (1969)

CRAFFORD, T.C.

- 1975 *SO₂ emission of the October-November, 1974, eruption of Volcán Fuego, Guatemala*: MA Thesis, Dartmouth College, 56p.
- 1975 SO₂ emission of the 1974 eruption of Volcán Fuego, Guatemala: *Bull. Volc.* 39, 4, 536-556.

CRANE, D.

- 1966 *Mapa geológico del cuadrángulo Jocotán*: IGN, Guatemala, 1:50,000.
- 1966 *Mapa geológico del cuadrángulo Timushán*: IGN, Guatemala, 1:50,000.

BURKART, B., CLEMONS, R.E., CRANE, D. (1973)

DONNELLY, T.W., BURKART, B., CRANE, D. (1968)

CRANE, H.R., GRIFFIN, J.B.

- 1966 University of Michigan radiocarbon dates XI: *Radiocarbon* 8, 256-285.

CULBERT, T.P.

ADAMS, R.E.W., BROWN, W.E., Jr., CULBERT, T.P. (1981)

CUMMINGS, G.L., KESLER, S.E.

1976 Source of lead in Central American and Caribbean mineralization: *Earth Planetary Sci. Letters* 31, 262-268.

CURIALE, J.A.

HARRISON, W.E., CURIALE, J.A. (1982)

CURIALE, J.A., HARRISON, W.E.

1982 Beta-sitosterol and stigmasterol in slope sediments: *DSDP* 67, p.587-590.

CZAPLA, H.

SCHEWE, L., CZAPLA, H. (1981)

D

DALLAS, A., ANDERSON, R., HOBART, M.

- 1980 The implications of hydrothermal circulation for sediment erodibility and mass movement (abs.): *EOS* 61, 46, 999.

DALZIEL, M.

- ROBERTS, A.A., DONOVAN, T.J., DALZIEL, M., FORGEY, R.L. (1978)

DAMON, P.E., CONEY, P.J.

- 1983 Rate of movement of nuclear Central America along the coast of Mexico during the last 90 M.A. (abs.): *GSA Abs. Prog.* 15, 6, 553.

DANN, J.C.

- REYNOLDS, J.H., DANN, J.C. (1975)

DARTMOUTH COLLEGE

- 1975 *Mapa geológico del cuadrángulo San José Pinula*: IGN, Guatemala, 1:50,000.

- 1980 *Mapa geológico del cuadrángulo Cuilapa*: IGN, Guatemala, 1:50,000.

- 1980 *Mapa geológico del cuadrángulo Nueva Santa Rosa*: IGN, Guatemala, 1:50,000.

DARY, R.M.

- THURMOND, T., DARY, R.M. (1973)

da SILVA, ZENAIDE, C.G.

- 1967 *Studies of jadeites and albitites from Guatemala*: MS Thesis, Rice Univ., 33p.

- 1969 Estudio sobre jadeitas y albititas de Guatemala: *IGN, Guatemala Bol. Geol.* 5, 22p.

- 1970 Origin of albitites from eastern Guatemala: *Boletim dos Servicos da geologia e minas, (Brazil)* 22, p.23-32.

DAVIES, D.K.

- BOOTHBY, D., GREER, E.W. Jr., DAVIES, D.K., BONIS, S. (1978)

- FAHLQUIST, D.A., DAVIES, D.K. (1971)

- FOLEY, M.G., VESSELL, R.K., DAVIES, D.K., BONIS, S. (1978)

DAVIES, D.K. (cont.)

- HEBBERGER, J.J., DAVIES, D.K., BONIS, S. (1977)
HUNTER, B.E., DAVIES, D.K. (1979)
HUNTER, B.E., DAVIES, D.K., BONIS, S. (1976)
MILES, R.C., DAVIES, D.K., BONIS, S. (1977)
VESSELL, R.K., DAVIES, D.K. (1978)
VESSELL, R.K., DAVIES, D.K., FOLEY, M.G. (1979)
VESSELL, R.K., DAVIES, D.K., FOLEY, M.G., BONIS, S. (1977)

DAVIES, D.K., ALMON, W.R.

- 1978 Reservoir potential of volcanogenic sandstones (abs.): *AAPG Bull.* 63, 2, 508.

DAVIES, D.K., ALMON, W.R., BONIS, S., HUNTER, B.E.

- 1979 Deposition and diagenesis of Tertiary-Holocene volcaniclastics, Guatemala, in Scholle, P.A. and Schluger, P.R., eds., *Aspects of diagenesis*: Soc. Econ. Paleont. Mineral. Spec. Pub. No. 26, p. 281-306.

DAVIES, D.K., BONIS, S.

- 1976 Continental volcanic sediments and their sedimentation (abs.): *AAPG Bull.* 60, 4, 662.
1977 Observations on glowing avalanches and lahars at the volcano Fuego, Guatemala (abs.): *GSA Abs. Prog.* 9, 7, 943.

DAVIES, D.K., BONIS, S., HUNTER, B.E.

- 1976 Quaternary sedimentary geology, subduction and tectonic segmentation, Guatemala (abs.): *GSA Abs. Prog.* 8, 1, 16.

DAVIES, D.K., COMBS, M.J., QUEARRY, M.W., BONIS, S.

- 1975 Sedimentology of airfall ash and glowing avalanches, Volcán de Fuego, Guatemala (abs.): *GSA Abs. Prog.* 7, 7, 1045-1046.

DAVIES, D.K., QUEARRY, M.W., BONIS, S.

- 1976 Glowing avalanches, Volcán de Fuego 1974 (abs.): *EOS* 57, 4, 346.
1978 Glowing avalanches from the 1974 eruption of the volcano Fuego, Guatemala: *GSA Bull.* 89, 3, 369-384.

- DAVIES, D.K., VESSELL, R.K., MILES, R.C., FOLEY, M.G.,
BONIS, S.
- 1978 Fluvial transport and downstream sediment modification in an active volcanic region, in Miall, A.D., ed., *Fluvial sedimentology*: Canada Soc. Petrol. Geol. Mem. 5, 61-84.
- DAVIS, G.H.
- 1966 *Geology of the eastern third of the La Democracia quadrangle*: MA Thesis, Univ. Texas, Austin, 78p.
- ANDERSON, T.H., BOYD, A., DAVIS, G.H. (1967)
- DAWSON, R.F.
- 1974 Basaltic ash as an agricultural substratum in Guatemala (abs.): *Trace Subst. Environ. Health Proc.*, Abs. 8, 24-25.
- 1976 *Volcanism, geochemistry and agriculture of Guatemala; a survey*: ICAITI Pub. Geol. 5, 132-144.
- DAY, M.J.
- 1982 The influence of some material properties on the development of tropical karst terrain: *Cave Science (GBR.)* 9, 1, 27-37.
- DEAN, B.W.
- 1976 *Focal mechanism solutions and tectonics of the Middle America arc*: MA Thesis, Dartmouth College, 81p.
- DEAN, B.W., DRAKE, C.L.
- 1978 *Focal mechanism solutions and tectonics of the Middle America arc*: Jour. Geol. 86, 1, 111-128.
- DeATLEY, S.
- BERGER, R., DeATLEY, S., PROTSCHE, R., WILLEY, G.R. (1974)
- DEATON, B.C.
- 1982 *Relationship of the Colotenango Conglomerate of Guatemala to the motion of the Polochic fault during the Tertiary*: MS Thesis, Univ. Texas at Arlington.
- DECKER, R.W.
- 1973 State-of-the-art in volcano forecasting: *Bull. Volc.* 37, 3, 372-393.
- BONIS, S., BOHNENBERGER, O.H., STOIBER, R.E., DECKER, R.W. (1966)

- DECKER, R.W., KINOSHITA, W.T.
- 1972 Geodetic measurements, *in* *The surveillance and prediction of volcanic activity*: Paris, UNESCO, 47-74.
- DECKER, R.W., STOIBER, R.E. (eds.)
- 1974 Symposium on volcanism in Mexico and Central America: *Bull. Volc.* 37, 3, 289-462.
- DEEP SEA DRILLING PROJECT (DSDP)
- 1982 On Leg 84, Challenger drills off Guatemala: *Geotimes*: 27, 7, 23-25.
- DEEVEY, E.S. Jr.
- 1978 Holocene forests and Maya disturbance near Quexil Lake, Petén, Guatemala: *Polsk. Arch. Hydrobiol.* 25, 117-129.
- BROOKS, H.K., COOLEY, J., DEEVEY, E.S. Jr., *et al.* (1973)
TSUKUDA, M., DEEVEY, E.S. Jr. (1967)
- DEEVEY, E.S. Jr., *et al.*
- 1979 Mayan urbanism: Impact on a tropical karst environment: *Science* 206, 298-306.
- DEEVEY, E.S. Jr., BRENNER, M., BINFORD, M.W.
- 1983 Paleolimnology of the Petén Lake district, Guatemala, III. Late Pleistocene and Gamblian environments of the Maya area: *Hydrobiologia* 103, 211-216.
- DEEVEY, E.S. Jr., BRENNER, M., FLANNERY, M.S.,
YEZDANI, G.H.
- 1980 Lakes Yaxha and Sacnab, Petén, Guatemala, limnology and hydrology: *Arch. Hydrobiol. Suppl.* 57, 4, 419-460.
- DEEVEY, E.S. Jr., GARRETT-JONES, S., VAUGHAN, H.H.
- 1980 Impact of Mayan civilization on tropical lowland forest (abs.): *Int. Palynological Conf.* 5, 107.
- DEEVEY, E.S. Jr., VAUGHAN, H.H., DEEVEY, G.B.
- 1977 Lake Yaxha and Sacnab, Petén, Guatemala: Planktonic fossils and sediment focusing, *in* Golterman, H.L. (ed.), *Interactions between sediments and fresh water*, The Hague, Junk and Wageningen, PUDOC; 189-196.
- DEEVEY, G.B.
- DEEVEY, E.S. Jr., VAUGHAN, H.H., DEEVEY, G.B. (1977)

- DeGRAFF, J.
ROSE, W.I. Jr., GRANT, N.K., HAHN, G.A., LANGE, I.M., POWELL, J.,
EASTER, J., DeGRAFF, J. (1977)
- DELALOYE, M.
BERTRAND, J., DELALOYE, M., *et al.* (1978)
- de la PEA, G., CABRERA, J.
- 1982 Influence of geology and geotechnics on design of Pueblo Viejo
Dam: *Intl. Congr. large dams Trans.* 14, II, Paris, p. 849-857.
- DELAMARE, D.C., JUBERTHIE, C.
- 1975 Mission en République de Saint Domingue et en Guatemala (8
Avril au 29 Avril 1975): *Ann. Speleol.* 30, 4, 767-771.
- DENCE, M.
FELLER, E., TANNER, J., DENCE, M., (eds) (1977)
- DENGO, C.A.
- 1978 *Frictional characteristics of serpentine from the Motagua fault zone
in Guatemala: an experimental study*: MS Thesis, Texas A&M
Univ., 80p.
- 1982 *Structural analysis of the Polochic fault zone in western Guate-
mala*: Ph.D. Thesis, Texas A&M Univ., 293p.
- 1982 A structural analysis of cores from the Leg 67 transect across
the Middle America Trench - offshore Guatemala: *DSDP* 67,
p. 651-666.
- DENGO, C.A., LOGAN, J.M.
- 1977 Frictional characteristics of serpentinite from the Motagua fault
zone in Guatemala (abs.): *EOS* 58, 12, 1227.
- 1978 Frictional characteristics of serpentinite from the Motagua fault
zone in Guatemala: *Intl. Symp. 1976 Guatemala earthquake vol.*
1 (n.p., approx. 158-186), Guatemala City.
- 1981 Superimposed deformation environments along the Polochic
fault zone in western Guatemala, Central America (abs.): *GSA
Abs. Prog.* 13, 7, 439.
- 1981 Implications of the mechanical and frictional behavior of
serpentinite to seismogenic faulting: *Jour. Geophys. Res.* 86, B11,
10771-10782.

- DENGO, G.
- 1967 *Geological structure of Central America: Studies in tropical oceanography*, Univ. Miami 5, 56-73.
- 1968 *Estructura geológica, historia tectónica y morfología de América Central*: Centro Regional de Ayuda Técnica, (A.I.D.) México, D. F. 50p.
- 1969 Relación de las serpentinitas con la tectónica de América Central: *Simposio Panamericano del Manto Superior*, México, D.F. 2, 23-28.
- 1969 Problems of tectonic relations between Central America and the Caribbean: *Gulf Coast Assoc. Geol. Soc. Trans.* 19, 311-320.
- 1972 Review of Caribbean serpentinites and their tectonic implications: *GSA Mem.* 132, 303-312.
- 1975 Paleozoic and Mesozoic tectonic belts in Mexico and Central America, in Nairn, A., Stehli, F., eds., *The ocean basins and margins, The Gulf of Mexico and the Caribbean*: New York, Plenum Press, p. 283-323.
- 1978 Marco tectónico de la región del Caribe: reseña histórica: *Intl. Symp. 1976 Guatemala earthquake*, vol. 2, (n.p., approx. 31-38), Guatemala City.
- 1983 Tectónica del cinturón plegado de Chiapas y Guatemala (abs.): *Carib. Geol. Conf. 10, Cartagena, Prog. Abs.*, p. 34.
- 1983 Geodynamics of Central America, in *Geodynamics of the Eastern Pacific region, Caribbean and Scotia Arcs*: Geodynamics Series vol. 9, American Geophysical Union, p. 33-39.
- BOHNENBERGER, O.H., DENGO, G. (1978)
- BONIS, S., BOHNENBERGER, O.H., DENGO, G. (1970)
- DENGO, G., BOHNENBERGER, O.H.
- 1969 Structural development of northern Central America, in McBirney, A., ed., *Tectonic relations of northern Central America and the western Caribbean*: AAPG Mem. 11, 203-220.
- 1974 Central America, in *World bibliography and index of Quaternary tephrachronology*: Univ. Alberta, Edmonton, Canada, 27-41.

- DENGO, G., BOHNENBERGER, O.H., BONIS, S.
- 1970 Tectonics and volcanism along the Pacific marginal zone of Central America: *Geol. Rundschau*, 59, 3, 1215-1232.
- DENGO, G., LEVY, E., BOHNENBERGER, O.H., CABALLEROS, R.
- 1969 *Mapa metalogenético de América Central*: ICAITI Pub. Geol. 3, 1:2,000,000.
- DENHAM, C.R.
- LIDDICOAT, J.D., DENHAM, C.R., PAULL, C.K. (1981)
- DER, Z.A., FLINN, E.A.
- 1975 The applicability of principal component analysis to the separation of multiple plane-wave signals: *SSA Bull.* 65, 3, 627-635.
- DEWEY, J.W.
- PERSON, W.J., SPENCE, W., DEWEY, J.W. (1976)
- DEWEY, J.W., BRUCE, R.J.
- 1976 Main event source parameters from teleseismic data, in Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 19-23.
- DEWEY, J.W., PERSON, W.J.
- 1976 A study of teleseismically recorded aftershocks of the Guatemala earthquake of February 4, 1976 (abs.): *EOS* 57, 12, 950.
- DIDYK, B.M.
- SHIPLEY, T.H., DIDYK, B.M. (1982)
- DIETZ, R.S.
- FREELAND, G.L., DIETZ, R.S. (1971)
- DILLON, W.P., VEDDER, J.G.
- 1973 Structure and development of the continental margin of British Honduras: *GSA Bull.* 84, 8, 2713-2732.
- DINKELMAN, M.G.
- MALFAIT, B.T., DINKELMAN, M.G. (1972)
- DIXON, J.
- ASKENASY, P., DIXON, J., McKEE, T. (1973)
- DIXON, T.
- REBILLARD, P., DIXON, T., FARR, T. (1982)

- DMITRIEV, Y.I.
- 1982 Basalts of the Middle America trench (Guatemala Transect) and their correlation with oceanic and island-arc tholeiites: *DSDP* 67, 577-584.
- DOBSON, D.C.
- BERGQUIST, C.L., DOBSON, D.C., ERLER, E.L., HITZMAN, M.W. (1976)
- DOBSON, D.C., HITZMAN, M., REYNOLDS, J.H., ERLER, E.L.
- 1977 *Geology of the Cuilapa quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 45p.
- DOMINICO, E.
- BETHANCOURT, H., DOMINICO, E. (1982)
- BETHANCOURT, H., DOMINICO, E., GIRELLI, M., PASQUARÉ, G. (1977)
- DONLEY, W.M.
- 1971 *The pumice landscape of Guatemala: A study of basin morphology and land form in the upland tropics*: Ph.D. Thesis, Univ. Oregon, 197p.
- DONNELLY, T.W.
- 1975 The geological evolution of the Caribbean and Gulf of Mexico - some critical problems and areas, in Nairn, A., Stehli, F., eds., *The ocean basins and margins*, vol. 3, The Gulf of Mexico and the Caribbean: New York, Plenum Press, 663-683.
- 1977 Metamorphic rocks and structural history of the Motagua suture zone, eastern Guatemala (abs.): *Carib. Geol. Conf. 8, Abs.*, Caracas, 41-42.
- 1978 Geological history of the Motagua Valley and of the Motagua fault system: *Intl. Symp. 1976 Guatemala earthquake*, vol. 1 (n.p., approx. 208-210), Guatemala City.
- CASE, J.E., DONNELLY, T.W. (1976)
- SCHWARTZ, D.P., CLUFF, L., DONNELLY, T.W. (1978)
- DONNELLY, T.W., BURKART, B., CRANE, D.
- 1968 Geologic history of the landward extension of the Bartlett Trough, some preliminary notes: *Carib. Geol. Conf. 4*, Port of Spain, Trinidad and Tobago, 225-228.
- DONOVAN, T.J.
- ROBERTS, A.A., DONOVAN, T.J., DALZIEL, M., FORGEY, R.L. (1978)

- DOTT, R.H. Sr., REYNOLDS, M.J.
1969 Environment of source-bed formation: *AAPG Mem.* 5, 123-158.
- DRAKE, C.L.
CARR, M.J., STOIBER, R.E., DRAKE, C.L. (1974)
DEAN, B.W., DRAKE, C.L. (1978)
- DREUX, D.
1968 *Speleologie chez les Mayas*: C.E.R.S.M.T. Paris et Guatemala.
1973 *Speleologie au Guatemala*: Speleologia Emiliana, 2, Anno. 5, No. 7.
1974 *Recherches en Alta Verapaz (1968-1974)*: C.E.R.S.M.T. Paris.
1974 *Espeleología en Guatemala*: Univ. San Carlos, Guatemala.
1974 Recherches speleologiques au Guatemala: *Spelunca* 141, 14-15.
1974 *Recherches du C.E.R.S.M.T. au Guatemala*: Inst. Speol. "Emile Recovitza.", Trav. 13, Bucarest, 205-211.
1974 Grottes tropicales du Guatemala: *Ann. Speleol.* 29, 1, 41-46.
- DREUX, D., *et al.*
1976 *Recherches speleologiques au Guatemala*: Spelunca, no. especial Guatemala, 40p.
- DREXLER, J.W.
1978 *Geochemical correlations of Pleistocene rhyolitic ashes in Guatemala with deep-sea ash layers of the Gulf of Mexico and equatorial Pacific*: MS Thesis, Michigan Technol. Univ., 66p.
- ROSE, W.I. Jr., BORNHORST, T.J., DREXLER, J.W. (1982)
ROSE, W.I. Jr., HAHN, G.A., DREXLER, J.W., LOVE, M., PETERSON, P.S., WUNDERMAN, R.L. (1981)
ROSE, W.I. Jr., PENFIELD, G.T., DREXLER, J.W., LARSON, P.B. (1980)
ROSE, W.I. Jr., WOODRUFF, L.G., DREXLER, J.W. (1977)
- DREXLER, J.W., ROSE, W.I. Jr., SPARKS, R., LEDBETTER, M.T.
1978 Geochemical correlation, age, and distribution of Pleistocene rhyolitic ashes in Guatemala with deep-sea ash layers of the Gulf of Mexico, equatorial Pacific and Caribbean (abs.): *EOS* 59, 12, 1105.

- DREXLER, J.W., ROSE, W.I. Jr., SPARKS, R., LEDBETTER, M.T.(cont.)
- 1980 The Los Chocoyos ash: Quaternary stratigraphic marker in Central America and in three ocean basins: *Quat. Res.*, 13, 327-345.
- 1980 Geochemical correlations of Pleistocene rhyolitic ashes in Guatemala with deep-sea ash layers of the Gulf of Mexico and equatorial Pacific: *Quat. Res.* 13, 373-391.
- DRUECKER, M.D.
- 1978 *The geology of the Bladen Volcanic Series, southern Maya Mtns., Belize, Central America*: MS Thesis, Colorado School of Mines.
- DRUMMOND, K.J. (Chairman)
- 1983 *Geologic map of the circum-Pacific region, Northeast Quadrant*: AAPG, 1:10,000,000.
- DURGIN, D.C., MALONE, G.C., VIKRE, P.C.
- 1970 *Geology of the northwestern portion of the San José Pinula quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 78p.

E

EARTHQUAKE ENGINEERING RESEARCH INSTITUTE RECONNAISSANCE TEAM

- 1976 The Guatemala earthquake of February 4, 1976: a preliminary report by the EERI reconnaissance team: *Newsletter, EERI* 10, 1-100.

EASTER, J.

- ROSE, W.I. Jr., GRANT, N.K., EASTER, J. (1979)
ROSE, W.I. Jr., GRANT, N.K., HAHN, G.A., LANGE, I.M., POWELL, J.,
EASTER, J., DeGRAFF, J. (1977)

EBERL, D.

- STOIBER, R.E., EBERL, D. (1969)

EGGERS, A.A.

- 1971 *Geology of the Amatitlán quadrangle, Guatemala*: Ph.D. Thesis, Dartmouth College, 221p. (Dissert. Abs. 33/03-B, p. 1156)
- 1975 *Mapa geológico del cuadrángulo Amatitlán*: IGN, Guatemala, 1:50,000.
- 1983 Temporal gravity and elevation changes at Pacaya Volcano, Guatemala: *Jour. Volc. Geotherm. Res.* 19, 223-237.

EGGERS, A.A., CHAVEZ, D.E.

- 1978 Baseline gravity and magnetic survey of Pacaya Volcano, Guatemala (abs.): *GSA Abs. Prog.* 10, 3, 104.
- 1979 Temporal gravity variations at Pacaya Volcano, Guatemala: *Jour. Volc. Geotherm. Res.* 6, 3-4, 391-402.

EGGERS, A.A., KRAUSE, J., RUSH, H., WARD, J.

- 1976 Gravity monitoring at Pacaya Volcano, Guatemala (abs.): *EOS* 57, 2, 88.
- 1976 Gravity changes accompanying volcanic activity at Pacaya Volcano, Guatemala: *Jour. Volc. Geotherm. Res.* 1, 3, 229-236.

EGGERT, R.G., LEA, P.D.

- 1978 *Geology of the central portion of the Santa Catarina Ixtahuacán quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 62p.

- EGUCHI, R.
HASSELMAN, T., EGUCHI, R. (1978)
- EICHELBERGER, J.C., McGETCHIN, T.R.
- 1976 Petrogenesis of the 1973 Pacaya lavas, Guatemala, *in* Eichelberger, J.C., McGetchin, T.R., Gonzalez Ferrán, O., eds., *Proceedings of the symposium on Andean and Antarctic volcanology problems*; Santiago, Chile, September, 1974: Intl. Assoc. Volcano. and Chem. Earth's Int. Rome, 435-449.
- EICHELBERGER, J.C., McGETCHIN, T.R., FRANCIS, P.W.
- 1973 Mode of emplacement of basalt flows at Pacaya, Guatemala (abs.): *EOS* 54, 4, 511.
- EILENBERG, S.
- 1979 *Variations of sulfur, copper and zinc in volcanoes from El Salvador and adjacent region*: MS Thesis, Rutgers Univ.
- EINARSSON, S.S.
- 1977 Opportunities for direct use of geoheat in Central America and other tropical countries: *Simposio Internacional Sobre Energía Eléctrica en América Latina*, Roma, p.585-603.
- EMERSON, S., JAHNKE, R.
- 1978 Pore water alkalinity results from MANOP sites M and H in the eastern equatorial Pacific (abs.): *EOS* 59, 12, 1117.
- ENDO, E.T., WARD, P.L., MARQUEZ, D., ALLEN, R.V., HARLOW, D.H
- 1973 A prototype global volcano surveillance system monitoring seismic activity and tilt; Part I, Implementation (abs.): *EOS* 54, 11, 1143.
- ENDO, E.T., *et al.*
- 1974 A prototype global volcano surveillance system monitoring seismic activity and tilt: *Bull. Volc.* 38, 2, 315-344.
- ENJALBERT, H.
- 1966 Los rasgos originales del karst en las montañas y mesetas calcáreas de México y de Guatemala, *in* *Union Geog. Intl. Conf. Regional Latinoamericana*, México, 1965, Proc. vol. 3, México D.F., Soc. Mexicana Geografía y Estadística, p. 227-280.
- 1967 Les montagnes calcaires du Mexique et du Guatemala: *Annales Geographie*, 76, 413, 29-59.

- ENJALBERT, H. (cont.)
- 1968 *La genèse des reliefs karstiques dans les pays tempérés et dans les pays tropicaux-Essai de chronologie*: Centre Recherches et Documentation Cartog. et Geog., Mem. et Doc. 1967. new ser., 4, 295-327.
- ENKEBOLL, R.H.
- 1978 *Sedimentary petrology of sands from the Middle America Trench and trench slope; Guatemala and southern Mexico*: MS Thesis, Univ. California, Santa Cruz.
- McMILLEN, K.J., ENKEBOLL, R.H., et al. (1982)
- ENKEBOLL, R.H., et al.
- 1982 Petrology and provenance of sands and gravels from the Middle America Trench and trench slope, southwestern Mexico and Guatemala: *DSDP* 66, 521-530.
- ERDLAC, R.J. Jr.
- 1979 *A study of the Chixoy-Polochic fault and its nature in western Guatemala*: MS Thesis, Univ. Pittsburg, 217p.
- ANDERSON, T.H., ERDLAC, R.J. Jr., SANDSTROM, M.A. (1980)
- ERDLAC, R.J. Jr., ANDERSON, T.H.
- 1979 The Chixoy-Polochic fault in western Guatemala (abs.): *GSA Abs. Prog.* 11, 2, 147.
- 1982 The Chixoy-Polochic fault and its associated fractures in western Guatemala: *GSA Bull.* 93, 57-67.
- ERLER, E.L.
- BERGQUIST, C.L., DOBSON, D.C., ERLER, E.L., HITZMAN, M.W. (1976)
DOBSON, D.C., HITZMAN, M., REYNOLDS, J.H., ERLER, E.L. (1977)
- ERNST, W.G.
- 1972 Occurrence and mineralogic evolution of blueschist belts with time: *Am. Jour. Sci.* 272, 7, 657-668.
- ESKER, G.C.
- 1969 *Upper Cretaceous planktonic foraminifera from Guatemala*: ICAITI Pub. Geol. 2, 56-57.

- ESPINOSA, A.F.
HUSID, R., ESPINOSA, A.F., ARIAS, J., HERMOSILLA, J. (1977)
HUSID, R., ESPINOSA, A.F., QUESADA, A. (1976)
- ESPINOSA, A.F. (ed.)
1976 The Guatemala earthquake of February 4, 1976, a preliminary report: *USGS Prof. Pap.* 1002, 90p.
- ESPINOSA, A.F., ASTURIAS, J., QUESADA, A.
1978 Aplicando las lecciones aprendidas en el terremoto de Guatemala de 1976 a problemas de zonificación sísmica en Guatemala: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 1, (n.p., approx. 292-383), Guatemala City.
- ESPINOSA, A.F., HUSID, R.
1979 *Guatemala* (abs.): *USGS Prof. Pap.* 1150, 323.
- ESPINOSA, A.F., HUSID, R., BONIS, S.
1977 Intensity distribution in Guatemala City and vicinity due to the February 4, 1976, destructive earthquake (abs.): *GSA Abs. Prog.* 9, 4, 418.
- ESPINOSA, A.F., HUSID, R., QUESADA, A.
1976 Intensity distribution and source parameters from field observations, in Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: *USGS Prof. Pap.* 1002, 52-56.
- EVENSON, R.E.
BUIS, O.J., EVENSON, R.E. (1977)

F

FAHLQUIST, D.A., DAVIES, D.K.

- 1971 Fault-block origin of the western Cayman Ridge, Caribbean Sea: *Deep-Sea Research* 18, 243-253.

FARLEY, R.A.

- MILLAN, S.M., FARLEY, R.A. (1979)

FARR, T.

- REBILLARD, P., DIXON, T., FARR, T. (1982)

FASS, R.W.

- 1982 Gravitational compaction patterns determined from sediment cores recovered during the DSDP Leg 67 Guatemalan transect; continental slope, Middle America Trench, and Cocos Plate: *DSDP 67*, p. 617-638.
- 1982 Plasticity characteristics of the Quaternary sediments of the Guatemalan continental slope, Middle America Trench, and Cocos Plate - Leg 67, DSDP: *DSDP 67*, p. 639-644.

FELLER, E., TANNER, J., DENCE, M., (eds.)

- 1977 The Latin American cooperative science programs of the United States National Science Foundation, *in Geophysics in the Americas; A symposium of the Geophysics commission of the Pan American Institute of Geography and History*: Publ. Earth Phys. Branch (Canada) 46, 3, 40-42.

FERNALD, F.

- CADLE, R.D., FERNALD, F., FRUSH, C. (1977)

FERNANDEZ R., R.

- 1970 Geothermal resources of Guatemala, Central America; *U.N. Symp. development and utilization geothermal resources*, Pisa: Geothermics, Spec. Issue 2, 1015-1025.

FERRATE F., L.

- 1977 *Analysis and environmental planning of the Guatemalan countryside; ecosystem evaluation of the topographic map of Totonicapán, scale 1:50,000*: Ph.D. Thesis, Univ. Oregon, Eugene, 381p.

FERRUSQUIA, V.I.

- 1978 Distribution of Cenozoic vertebrate faunas in Middle America and problems of migration between North and South America, in *Conexiones Terrestres entre Norte y Sur América*, Univ. Nac. Autón. México: Inst. Geol. Bol. 101, 193-221.

FIEDLER, G.

- 1976 Das Erdbeben von Guatemala vom 4. Februar 1976: *Geol. Rundschau* 66, 2, 309-335.
- 1977 Guatemala, Central America. The earthquake of the tectonic fault of Motagua, 4th February 1976: *Acad. Ciencia Fis. Mat. Nat. (Caracas)* 37, 112, 33-160.
- 1978 Relations between magnitude and ground acceleration for long distance earthquakes: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2, (n.p., approx. 251-258), Guatemala City.

FIGUEROA, S.H.

- 1977 Optimistic Mexican outlook seen: *Oil and Gas Jour.*, Sept. 19, 242-248.

FISH, J.E.

- 1975 Le zone karstique autour du Golf (abs.), in *Karst hydrology*: *Geol. Surv. Alabama*, p. 47.

FISHER, J.F.

- LINDSAY, D.D., BURKART, B., FISHER, J.F. (1975)
MARCUS, D.L., BURKART, B., FISCHER, J.F. (1975)

FISHMAN, B., LAWN, B.

- 1978 University of Pennsylvania radiocarbon dates: *Radiocarbon* (Am. Jour. Sci.) 20, 2, 210-233.

FLANNERY, M.S.

- DEEVEY, E.S. Jr., BRENNER, M., FLANNERY, M.S., YEZDANI, G.H. (1980)

FLEMING, R.

- HARP, E., WIECZOREK, G., WILSON, R.C., FLEMING, R. (1976)

FLINN, E.A.

- DER, Z.A., FLINN, E.A. (1975)

- FOLEY, M.G.
DAVIES, D.K., VESSELL, R.K., MILES, R.C., FOLEY, M.G., BONIS, S.
(1978)
VESSELL, R.K., DAVIES, D.K., FOLEY, M.G. (1979)
VESSELL, R.K., DAVIES, D.K., FOLEY, M.G., BONIS, S. (1977)
- FOLEY, M.G., VESSELL, R.K., DAVIES, D.K., BONIS, S.
1978 Bed-load transport mechanisms during flash floods, *Conference on flash floods; hydrometeorological aspects*, Peck, E.L., Chair.: American Meteorological Society, 109-116.
- FORGEY, R.L.
ROBERTS, A.A., DONOVAN, T.J., DALZIEL, M., FORGEY, R.L. (1978)
- FORTH, D.R.
1971 *Structure and stratigraphy of the Sacapulas quadrangle, Guatemala, with particular emphasis on Paleozoic rocks*: MS Thesis, Louisiana State Univ., 113p.
- 1975 *Mapa geológico del cuadrángulo Sacapulas*: IGN, Guatemala, 1:50,000.
- FOSS, J.E.
SEGOVIA, A.V., FOSS, J.E. (1980)
SEGOVIA, A.V., FOSS, J.E., SOLER, E.A. (1980)
- FOURNIER, R.D., HANSHAW, B.B., URRUTIA-SOLE, J.F.
1982 Oxygen and hydrogen isotopes in thermal waters at Zunil, Guatemala: *Geotherm. Resources Council Trans.* 6, 89-91.
- FOX, J.L.
BREZONIK, P.L., FOX, J.L. (1974)
- FRANCIS, P.W.
1973 Cannonball bombs, a new kind of volcanic bomb from the Pacaya Volcano, Guatemala: *GSA Bull.* 84, 2791-2794.
EICHELBERGER, J.C., McGETCHIN, T.R., FRANCIS, P.W. (1973)
THORPE, R.S., FRANCIS, P.W., MOORBATH, S. (1979)
- FREELAND, G.L., DIETZ, R.S.
1971 Plate tectonic evolution of Caribbean-Gulf of Mexico region: *Nature* 232, 5305, 20-23.

- FRIEDMAN, I.
ROSE, W.I. Jr., FRIEDMAN, I., WOODRUFF, L.G. (1980)
- FRUSH, C.
CADLE, R.D., FERNALD, F., FRUSH, C. (1977)
- FUCHTBAUR, H.
HEINEMANN, C., FUCHTBAUR, H. (1982)
- FUJIWARA, M.
HIRONO, M., FUJIWARA, M., ITABE, T., NAGASAWA, C. (1977)
- FULTZ, L.A.
1979 *Sr isotopic determinations of Guatemalan basalts*: MS Thesis,
Michigan Technol. Univ.
- GRANT, N.K., ROSE, W.I. Jr., FULTZ, L.A. (1983)

G

- GALE, L.
ROSE, W.I. Jr., WUNDERMAN, R.L., HOFFMAN, M., GALE, L. (1983)
- GALL, F.
1966 *Cerro Quemado, Volcán de Quezaltenango: Guatemala*, Editorial José de Pineda Ibarra, 115p.
- GANDRUD, B.
SEDLACEK, W., LAZRUS, A., GANDRUD, B. (1975)
- GANSE, R.
RINEHART, W., GANSE, R., et al. (1982)
- GARDNER, M.D., von ESCHEN, S.A.
1980 *Geology of the central section of the San Lucas Tolimán quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 54p.
- GARDNER, J.V.
1980 Mapping geologic structural features in tropical forest areas using SLAR; an example from Central America: *Intl. Symp. Remote Sensing Environment* 14, Proc., p. 1083-1088, San José, Costa Rica.
- GARRETT-JONES, S.
DEEVEY, E.S. Jr., GARRETT-JONES, S., VAUGHAN, H.H. (1980)
- GERLACH, C.
1980 Seismisch aktive Zonen an Plattengrenzen in Zentralamerika; Einsatzmöglichkeiten der Erdfernerkundung bei Lokalisierung und Abgrenzung am Beispiel der Stoerungssysteme in Guatemala: *Berlin Geowissenschaftliche Abh.*, Reihe A, no. 19, p. 61-63.
- GHARIB, A.
MORRIS, D.F., GHARIB, A., SABER, H. (1980)
- GHARIB, A., MORRIS, D.F.
1978 Rhenium and tungsten in nickeliferous lateritic profiles: *Mineral. Mag.* 42, 324, 513-516.

- GHINASSI, G.
1977 *Behavior of structures at the time of the February 1976 Guatemala earthquake*: Industria Italiana del Cemento, Rome 47, 329-342.
- GIERZYCKI, G.A.
1976 *Geology and geochemistry of three andesitic strato-volcanoes, Colombia quadrangle Guatemala*: MS Thesis, Michigan Technol. Univ., 86p.
- GIESKES, J.
HARRISON, W.E., HESSE, R., GIESKES, J. (1982)
- GILBERT, D.
SUMMERHAYES, C.P., GILBERT, D. (1982)
- GIRELLI, M.
BETHANCOURT, H., DOMINICO, E., GIRELLI, M., PASQUARÉ, G. (1977)
- GLASS, R., *et al.*
1977 Earthquake injuries related to housing in a Guatemala village: *Science* 197, 4304, 638-643.
- GODOY, J.
ACEITUNO, M., GODOY, J. (1966)
BURKART, B., CLEMONS, R.E., GODOY, J. (1969)
KUPFER, D.H., GODOY, J. (1967)
- GOLDBERG, E.
GRIFFIN, J., GOLDBERG, E. (1969)
- GOLDENBERG, J.E.
1978 *An investigation of the effects of the solid earth tides on the triggering of volcanic eruptions in Central America*: MS Thesis, Rutgers Univ., 61p.
- GOLDSTEIN, A.
LANGMUIR, C., GOLDSTEIN, A., *et al.* (1981)
- GOMBERG, D.M., BANKS, P.O., McBIRNEY, A.R.
1968 Guatemala: Preliminary zircon ages from Central Cordillera: *Science* 162, 10, 121-122.
- GONZALES, E.
1980 *An analysis of volcaniclastic sediments, Pacific offshore, Guatemala*: MS Thesis, Texas Tech. Univ.

- GOSE, W.A.
- 1982 Some paleomagnetic results from DSDP Leg 67 off Guatemala: *DSDP* 67, p. 669-673.
- GOSE, W.A., SANCHEZ-BARREDA, L.
- 1981 Paleomagnetic results from southern Mexico: *Geophys. Intl.* 20, 3, 163-375.
- GOSE, W.A., SCOTT, G., SWARTZ, D.
- 1980 The aggregation of Mesoamerica: paleomagnetic evidence, in Pilger, R., ed., *Origin of the Gulf of Mexico and the early opening of the central North Atlantic Ocean*: Baton Rouge, Louisiana State Univ., p. 51-54.
- GOULDEN, C.E.
- 1966 La aguada de Santa Ana Vieja - an interpretative study of the Cladoceran microfossils: *Archiv Hydrobiologie*, 62, 3, 373-404.
- 1966 The animal microfossils, in *The history of Laguna de Petenxil, a small lake in northern Guatemala*: Connecticut Acad. Arts Sci. Mem. 17, 84-120.
- GRAHAM, A.
- 1978 Distribution and migration of Cenozoic floras in Mesoamérica, in *Conexiones Terrestres entre Norte y Sudamérica, UNAM*: Inst. Geol. Bol. 101, 166-180.
- GRANT, N.K.
- ROSE, W.I. Jr., GRANT, N.K. (1976)
- ROSE, W.I. Jr., GRANT, N.K., EASTER, J. (1979)
- ROSE, W.I. Jr., GRANT, N.K., HAHN, G.A., LANGE, I.M., POWELL, J., EASTER, J., DeGRAFF, J. (1977)
- GRANT, N.K., ROSE, W.I. Jr., FULTZ, L.A.
- 1983 Open-system fractionation in basalts and basaltic andesites from Guatemala (abs.): *EOS* 64, 18, 330.
- GRANT, R.E.
- STEHLI, F.G., GRANT, R.E. (1969, 1970)
- GRASES, J.G.
- 1975 Migration of destructive earthquakes in Middle America and associated risk of occurrence: *Eur. Symp. Earthquake Eng. Proc.* 3, no. 5, vol. 2, p. 5, Istanbul.

GRASES, J.G. (cont.)

- 1975 *Sismicidad de la región asociada a la cadena volcánica centroamericana del Cuaternario*: Univ. Central Venezuela - Organización Estados Americanos, Caracas, 106p.

- 1977 Introducción al estudio sobre los sismos destructores del Caribe: *Interciencia*, 2, 4, 222-229.

GREER, E.W. Jr.

- 1978 *Deltaic sedimentation on an active volcanic margin, Rio Achiguate, Pacific Coast, Guatemala*: MS Thesis, Texas Tech Univ., 127p.

BOOTHBY, D., GREER, E.W. Jr., DAVIES, D.K., BONIS, S. (1978)

GREPPI, J.

BURKE, K., GREPPI, J., SENGOR, A.M. (1978)

GRIFFIN, J., GOLDBERG, E.

- 1969 Recent sediments of the Caribbean Sea: *AAPG Mem.* 11, 258-268.

GRIFFIN, J.B.

CRANE, H.R., GRIFFIN, J.B. (1966)

GRIFFITH, H.E. Jr., JACKSON, M.M. Jr.

- 1980 *Geology of the eastern one-quarter of the San Lucas Tolimán quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 65p.

GROSSLING, B.F.

- 1975 Latin America's petroleum prospects in the energy crisis: *USGS Bull.* 1411, 40p.

GRUMWELD, J., MUSGROVE, P.

- 1970 *Natural resources in Latin American development*: Baltimore, Johns Hopkins Press, 494p.

GUILD, P.W.

- 1974 Mineral resources of the Caribbean region (abs.): *GSA Abs. Prog.* 6, 7, 767-768.

- 1981 *A preliminary metallogenic map of North America: a numerical listing of deposits*: USGS Circular 858-A, p. A1-A93.

- 1981 *Preliminary metallogenic map of North America: An alphabetical listing of deposits*: USGS Circular 858B, p. B1-B72.

- 1981 (Chair.) *Metallogenic map of North America*: USGS, 1:5,000,000.

H

HAHN, G.A.

- 1976 *Interbasin geochemical correlation of genetically related rhyolitic ash-flow and airfall tuffs, central and western Guatemala*: MS Thesis, Michigan Technol. Univ., 68p.

ROSE, W.I. Jr., GRANT, N.K., HAHN, G.A., LANGE, I.M., POWELL, J., EASTER, J., DeGRAFF, J. (1977)

ROSE, W.I. Jr., HAHN, G.A. (1976)

ROSE, W.I. Jr., HAHN, G.A., DREXLER, J.W., LOVE, M., PETERSON, P.S., WUNDERMAN, R.L. (1981)

ROSE, W.I. Jr., JOHNSON, D.J., HAHN, G.A. (1975)

ROSE, W.I. Jr., JOHNSON, D.J., HAHN, G.A., JOHNS, G.W. (1975)

HAHN, G.A., ROSE, W.I. Jr.

- 1976 Inter-basin geochemical correlation of genetically related rhyolitic ash-flow and airfall tuffs, central and western Guatemala (abs.): *GSA Abs. Prog.* 8, 5, 587.

HAHN, G.A., ROSE, W.I. Jr., MEYERS, T.

- 1979 Geochemical correlation of genetically related rhyolitic ash-flow and airfall ashes, central and western Guatemala and the Equatorial Pacific, in Chapin, C., Elston, W., eds., *Ash flow tuffs*: GSA Spec. Pap. 180, 101-112.

HALL, I.H.S.

BATESON, J.H., HALL, I.H.S. (1971, 1977)

HALL, I.H.S., BATESON, J.H.

- 1972 Late Paleozoic lavas in Maya Mountains, British Honduras, and their possible regional significance: *AAPG Bull.* 56, 5, 950-956.

HALL, W.K.

LEIGH, R.A., BUIS, O.J., HALL, W.K. (1976)

HALLAGER, H.

CLEARY, J., HALLAGER, H. (1974)

HALSOR, S.

BORNHORST, T.J., ROSE, W.I. Jr., HALSOR, S. (1983)

- HALSOR, S., ROSE, W.I. Jr., BORNHORST, T.J.
1983 Shallow crustal evolution of basaltic and andesitic magmas at Atitlán and Tolimán volcanoes, Guatemala (abs.): *EOS* 64, 45, 892.
- HAMMOND, N.
1972 Obsidian trade routes in the Mayan area: *Science* 178, p.1092-1093.
- HAMMOND, N., ASPINALL, A., *et al.*
1977 Maya jade: source location and analysis, in Earle, T., Erikson, J., eds., *Exchange systems in prehistory*: New York, Academic Press, p. 36-67.
- HANSHAW, B.B.
FOURNIER, R.D., HANSHAW, B.B., URRUTIA-SOLE, J.F. (1982)
- HARJU, H.O.
1970 Exploration of Exmibal's nickel laterite deposits in Guatemala, in Evans, D.J., ed., *Intl. laterite symp.*: Am. Inst. Min. Metall., and Pet. Eng., Soc. Min. Eng. New York, p. 245-251.
- HARLOW, D.H.
1971 *Volcanic earthquakes*: MA Thesis, Dartmouth College, 71p.
1976 Instrumentally recorded seismic activity prior to the main event, in Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 12-16.
ENDO, E.T., WARD, P.L., MARQUEZ, D., ALLEN, R.V., HARLOW, D.H. (1973)
McNUTT, S.R., HARLOW, D.H. (1983)
WHITE, R.A., HARLOW, D.H. (1979, 1980)
WHITE, R.A., HARLOW, D.H., SANCHEZ, E. (1981)
WHITE, R.A., SANCHEZ, E., CIFUENTES, I., HARLOW, D.H. (1980)
- HARLOW, D.H., WARD, P.L.
1974 Continued evaluation of a prototype global volcano surveillance system (abs.): *EOS* 56, 12, 1147.
- HARLOW, D.H., WHITE, R.A.
1980 *Preliminary catalog of seismicity prior to the Guatemala earthquake of February 4, 1976 from the area between Guatemala City and Lake Atitlán (March 1975-February 1976)*: USGS Open-File Report 80-60, 24p.

- HARP, E., WIECZOREK, G., WILSON, R.C.
- 1978 Earthquake-induced landslides from the February 4, 1976 Guatemala earthquake and their implications for landslide hazard reduction: *Intl. Symp. 1976 Guatemala earthquake*, vol. 1 (n.p., approx. 423-455), Guatemala City.
- HARP, E., WIECZOREK, G., WILSON, R.C., FLEMING, R.
- 1976 Seismic-induced landslides from the February 4, 1976, Guatemala earthquake (abs.): *GSA Abs. Prog.* 8, 6, 905.
- HARP, E., WILSON, R.C., WIECZOREK, G.
- 1978 Landslides from the February 4, 1976 Guatemala earthquake; implications for seismic hazard reduction in the Guatemala City area: *Intl. Conf. Microzonation Safer Constr.-Res. Appl.*, 2, 1, 353-366.
- 1981 Landslides from the February 4, 1976, Guatemala earthquake: *USGS Prof. Pap.* 1204-A, 35p.
- HARPER, H., RIDER, J., ABBOT, W.
- 1982 Diatom biostratigraphy of sites 495, 496, and 497, DSDP Leg 67: *DSDP 67*, p. 447-454.
- HARRIS, D.M.
- 1979 Pre-eruption variations of H₂O, S, and Cl in a subduction zone basalt (abs.): *EOS* 60, 46, 968.
- 1981 Vesiculation and eruption of subduction zone basalt (abs.): *EOS* 62, 45, 1084.
- HARRISON, W.E.
- CURIALE, J.A., HARRISON, W.E. (1982)
- HESSE, R., HARRISON, W.E. (1980, 1981, 1982)
- HARRISON, W.E., CURIALE, J.A.
- 1982 Gas hydrates in sediments of holes 497 and 498A, DSDP Leg 67: *DSDP 67*, p. 591-594.
- HARRISON, W.E., HESSE, R., GIESKES, J.
- 1982 Relationship between sedimentary facies and interstitial water chemistry of slope, trench and Cocos Plate sites from the Middle America Trench transect, active margin off Guatemala: DSDP Leg 67: *DSDP 67*, p. 603-614.

- HASSELMAN, T., EGUCHI, R.
1978 A simple method for incorporating the uncertainty of attenuation and spectral amplification: *Intl. Symp. 1976 Guatemalan Earthquake*, vol. 2 (n.p., approx. 237-250), Guatemala City.
- HASTENRATH, S.
1974 Traces of Pleistocene glaciation in the Altos Cuchumatanes, Guatemala: *Eiszeitalter Gegenwart*, 25, 25-34.
- HEBBERGER, J.J.
1977 *Recent laharic and glowing avalanche sediments, Guatemala*: MA Thesis, Univ. Missouri at Columbia, 117p.
- HEBBERGER, J.J., DAVIES, D.K., BONIS, S.
1977 Recent lahars, Fuego Volcano, Guatemala (abs.): *GSA Abs. Prog.* 9, 5, 603-604.
- HEEZEN, B.
PERFIT, M., HEEZEN, B. (1978)
- HEIDT, L.
CADLE, R.D., HEIDT, L. (1980, 1980)
ROSE, W.I. Jr., CADLE, R.D., HEIDT, L., *et al.* (1978, 1980)
ROSE, W.I. Jr., HEIDT, L., *et al.* (1980)
- HEIKEN, G.
1972 Morphology and petrography of volcanic ashes: *GSA Bull.* 83, 7, 1962-1988.
- HEINEMANN, C., FUCHTBAUR, H.
1982 Insoluble residues of the fine-grained sediments from the trench transect south of Guatemala, DSDP Leg 67: *DSDP 67*, p. 497-506.
- HEMPHILL, W.R.
1974 Experiments in the use of ERTS-1 data in geologic and land use analysis: Univ. Minn. Min. Symp. 35, *Issues confronting the mining industry*, p. 147-150.
- HENRISEY, R.
LANGER, C.J., BOLLINGER, G.A., HENRISEY, R. (1978)
- HERMOSILLA, J.
HUSID, R., ESPINOSA, A.F., ARIAS, J., HERMOSILLA, J. (1977)

- HESSE, R.
COULBOURN, W.T., HESSE, R., *et al.* (1982)
HARRISON, W.E., HESSE, R., GIESKES, J. (1982)
PRASAD, S., HESSE, R. (1982)
- HESSE, R., AUBOUIIN, J., *et al.*
1980 Deep-sea drilling results from the Pacific Middle America margin off Guatemala (IPOD Leg 67): *Berlin Geowissenschaftliche Abh.*, Reihe A, no. 19, p. 83-86.
- HESSE, R., HARRISON, W.E.
1980 Abnormally low pore-water salinities in deep marine sections of the continental margins related to gas-hydrate (clathrate) occurrence (abs.): *GSA Abs. Prog.* 12, 7, 446.
1981 Gas hydrates (clathrates) causing pore-water freshening and oxygen isotope fractionation in deep-water sedimentary sections of terrigenous continental margins: *Earth Planetary Sci. Lett.* 55, 3, 453-462.
1981 Interstitial water chemistry of DSDP holes on Guatemala Transect (Leg 67) related to occurrence of methane clathrates (gas hydrates): *AAPG Bull.* 65, 5, 937-938.
1982 Gas-hydrates and associated pore waters from the Pacific continental slope off Guatemala (abs.): *Intl. Cong. Sedimentology* 11, Hamilton, Canada, 1982, p. 166-167.
- HIGUERA DIAZ, A.E.
1983 *A paleolimnological record of human disturbance in Lakes Atitlan and Ayarza, Guatemala*: MA Thesis, Univ. Florida, 66p.
- HIRONO, M., FUJIWARA, M., ITABE, T., NAGASAWA, C.
1977 On the long term variations of stratospheric aerosol content after the eruption of Fuego Volcano observed by Lidar: *Jour. Geomag. Geoelectr.* 29, 541-556.
- HISATOMI, K.
SHIKI, T., YAMASAKI, T., HISATOMI, K. (1982)
- HITZMAN, M.W.
BERGQUIST, C.L., DOBSON, D.C., ERLER, E.L., HITZMAN, M.W. (1976)
DOBSON, D., HITZMAN, M.W., REYNOLDS, J.H., ERLER, E.L. (1977)
- HOBART, M.
DALLAS, A., ANDERSON, R., HOBART, M. (1980)

- HOBGOOD, J.
TOCHER, D., TURCOTTE, T., HOBGOOD, J. (1978)
- HOFFMANN, D.J.
ROSEN, J.M., HOFFMANN, D.J. (1981)
- HOFFMAN, D.J., ROSEN, J.M.
1976 Observations of stratospheric particulate matter following the eruption of Fuego (abs.): *EOS* 57, 346.
- 1977 Balloon observations of time development of stratospheric aerosol event of 1974-1975: *Jour. Geophys. Res.* 82, 1435-1440.
- HOFFMAN, M.
ROSE, W.I. Jr., WUNDERMAN, R.L., HOFFMAN, M., GALE, L. (1983)
- HOLCOMBE, T.L.
CASE, J.E., HOLCOMBE, T.L. (1980)
- HOLCOMBE, T.L., *et al.*
1973 Evidence for sea-floor spreading in the Cayman Trough: *Earth and Planetary Science Letters*, 20, 357-371.
- HOLEKAMP, C.P., LARSON, J.E., LUNDSTROM, S.C.
1978 *Geology of adjoining portions of the Santa Catarina Ixtahuacán and Sololá quadrangles*: Senior Honors Thesis, Dartmouth College, 47p.
- HONG, Y.
TOKSOZ, M., NABELEK, J., HONG, Y. (1983)
- HOOSE, S.N., WILSON, R.C.
1976 Liquefaction-caused ground failure during the Guatemala earthquake of February 4, 1976 (abs.): *GSA Abs. Prog.* 8, 6, 925.
- HOOSE, S.N., WILSON, R.C., ROSENFELD, J.
1978 Liquefaction-caused ground failure during the February 4, 1976 Guatemala earthquake: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 57-88), Guatemala City.
- HORNE, G., CLARK, G., PUSHKAR, P.
1976 Pre-Cretaceous rocks of northwestern Honduras: Basement terrane in Sierra de Omoa: *AAPG Bull.* 60, 4, 566-593.
- HORST, O.H.
KUENZI, W.D., HORST, O.H., McGHEE, R. (1979)

- HORST, O.H., KUENZI, W.D., McGHEE, R.
- 1976 *Sedimentación reciente en la planicie costera del suroeste de Guatemala y su relación con la actividad volcánica*: ICAITI Pub. Geol. 5, 113-131.
- HUEBERT, B.J.
- CADLE, R.D., HUEBERT, B.J., LAZRUS, A.L., ROSE, W.I. Jr. (1978)
LAZRUS, A.L., HUEBERT, B.J., CADLE, R.D., ROSE, W.I. Jr. (1978)
SMITH, D.B., ZIELINSKI, R.A., ROSE, W.I. Jr., HUEBERT, B.J. (1982)
- HUGHES, J.M.
- 1978 *Geology and petrology of Caldera Tzajuyub, western Guatemala*: MA Thesis, Dartmouth college, 123p.
- HUGHES, J.M., STOIBER, R.E., IDE, G.M., MAYNARD, S.R., MACKAY, A.M.
- 1980 Quaternary volcanism east of Zunil fault zone, western Guatemala (abs.): *EOS* 61, 6, 69.
- HUNTER, B.E.
- 1976 *Fluvial sedimentation on an active volcanic continental margin, Río Guacalate, Guatemala*: MA Thesis, Univ. Missouri at Columbia, 135p.
- DAVIES, D.K., ALMON, W.R., BONIS, S., HUNTER, B.E. (1979)
DAVIES, D.K., BONIS, S., HUNTER, B.E. (1976)
- HUNTER, B.E., DAVIES, D.K.
- 1979 Distribution of volcanic sediments in the Gulf Coastal Province - significance to petroleum geology: *Gulf Coast Assoc. Geol. Soc. Trans.* 29, 147-155.
- HUNTER, B.E., DAVIES, D.K., BONIS, S.
- 1976 Effects of volcanic activity on stream sedimentation, Guatemala (abs.): *GSA Abs. Prog.* 8, 4, 483-484.
- HURTADO de MENDOZA, L., JESTER, W.
- 1978 Obsidian sources in Guatemala, a regional approach: *Am. Antiquity* 43, 424-435.
- HUSID, R.
- 1980 The February 4, 1976, earthquake in Guatemala City and vicinity; engineering field report: *World Conf. Earthquake Eng. Proc.* 7, 9, 431-438.

HUSID, R. (cont.)

ESPINOSA, A.F., HUSID, R. (1979)

ESPINOSA, A.F., HUSID, R., BONIS, S. (1977)

ESPINOSA, A.F., HUSID, R., QUESADA, A. (1976)

HUSID, R., ASTURIAS, J.

1978 Damage in Guatemala City and vicinity due to the February 4, 1976 earthquake: *Intl. Symp. 1976 Guatemala earthquake*, vol. 1 (n.p., approx. 478-536), Guatemala City.

HUSID, R., ESPINOSA, A.F., ARIAS, J., HERMOSILLA, J.

1977 Damage, losses, and structural engineering observations in Guatemala City after the 1976 Guatemalan earthquake (abs.): *GSA Abs. Prog.* 9, 4, 440-441.

HUSID, R., ESPINOSA, A.F., QUESADA, A.

1976 Damage and engineering implications, in Espinosa, A.F., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 67-79.

HUSSLER, G.

CONNAN, J., HUSSLER, G., ALBRECHT, P. (1980)

HUSSONG, D.

AMBOSE, E., HUSSONG, D., CARTER, J. (1981)

HUTCHINSON, G.E.

COWGILL, V.M., HUTCHINSON, G.E. (1966, 1966, 1966, 1969)

HYDE, D.

MARTINO, O., HYDE, D., VELASCO, D. (1981)

HYDE, D.S.

1975 *Geology of the northeastern portion of the Nueva Santa Rosa quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 24p.

I

- IBRAHIM, A.K.
LADD, J.W., IBRAHIM, A.K., McMILLEN, K.J., et al. (1978, 1978, 1982)
- IBRAHIM, A.K., LATHAM, G.V., LADD, J.W.
1978 Seismic refraction and reflection in the arc-trench gap off Guatemala (abs.): *EOS* 59, 4, 322.
- 1979 Seismic refraction measurements in the Middle American Trench offshore Guatemala: *Jour. Geophys. Res.* 84, B10, 5643-5649.
- IDE, G.M.
HUGHES, J.M., STOIBER, R.E., IDE, G.M., MAYNARD, S.R., MACKAY, A.M. (1980)
- IDE, G.M., MACKAY, A.M., MAYNARD, S.R.
1979 *Geology of the southwestern corner of the Santa Catarina Ixtahuacán quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 71p.
- IDRISS, I.M.
SEED, H.B., IDRISS, I.M., ARANGO, I. (1983)
- INOUE, K.
KUBOTA, Y., ITOH, J., INOUE, K. (1981)
- INSTITUTO GEOGRAFICO NACIONAL
1966 *Bibliografía Geológica de Guatemala, América Central, (hasta 1965), (Bibliography of Guatemala Geology, up to 1965)*: IGN, Guatemala, 81p.
- 1972 *Atlas Nacional de Guatemala*: IGN, Guatemala.
- ISPHORDING, W.C.
SUTTON, T.C., ISPHORDING, W.C. (1979)
- ITABE, T.
HIRONO, M., FUJIWARA, M., ITABE, T., NAGASAWA, C. (1977)
- ITOH, J.
KUBOTA, Y., ITOH, J., INOUE, K. (1981)
- ITURRALDE-VINENT, M.A.
1975 Problems in application of modern tectonic hypothesis to Cuba and Caribbean region: *AAPG Bull.* 59, 5, 838-855.

J

- JACHENS, R.
MONGES CALDERA, J., JACHENS, R., ANDRADE, D., CASE, J.E. (1976)
- JACK, R.N.
BOWLES, F.A., JACK, R.N., CARMICHAEL, J.S.E. (1973)
- JACKSON, M.M. Jr.
GRIFFITH, H.E. Jr., JACKSON, M.M. Jr. (1980)
- JACOBSEN, S.B., WASSERBURG, G.J.
1979 Nd and Sr isotopic study of the Bay of Islands ophiolite complex
and the evolution of the source of mid-ocean ridge basalts: *Jour. Geophys. Res.* 18, B13, 4729-4775.
- JAHNKE, R.
EMERSON, S., JAHNKE, R. (1978)
- JARAMILLO, L.
MARTINI, J., JARAMILLO, L. (1975)
- JENKINS, R.P.
STOIBER, R.E., LEGGETT, D.C., JENKINS, R.P., MURRMANN, R.P.,
ROSE, W.I. Jr. (1971)
- JENNINGS, P., KANAMORI, H.
1979 Determination of local magnetized, M_L , from seismoscope
records: *SSA Bull.* 69, 1267-1288.
- JEPSEN, A.
STOIBER, R.E., JEPSEN, A. (1973)
- JESTER, W.
HURTADO de MENDOZA, L., JESTER, W. (1978)
- JIMENEZ, C.
REYES, A., MUNGUILA, L., LOMNITZ, C., PONCE, L., JIMENEZ, Z.,
JIMENEZ, C. (1976)
- JIMENEZ, Z.
REYES, A., MUNGUILA, L., LOMNITZ, C., PONCE, L., JIMENEZ, Z.,
JIMENEZ, C. (1976)

- JOHNS, G.W.
1975 *The geology of the Cerro Quemado volcanic dome complex, Guatemala*: MS Thesis, Michigan Technol. Univ., 124p.
- ROSE, W.I. Jr., JOHNSON, D.J., HAHN, G.A., JOHNS, G.W. (1975)
- JOHNSON, D.J.
ROSE, W.I. Jr., JOHNSON, D.J., HAHN, G.A., JOHNS, G.W. (1975)
ROSE, W.I. Jr., JOHNSON, D.J., HAHN, G.A. (1975)
- JORDAN, T.H.
1975 The present-day motions of the Caribbean plate: *Jour. Geophys. Res.* 80, 4433-4439.
- JOSEY, W.L.
1970 *Metamorphic petrology and structural geology of the Santa Bárbara quadrangle, Guatemala*: MS Thesis, Louisiana State Univ., 95p.
- COLLINS, E.M., JOSEY, W.L., STEVENS, W.E. (1981)
KESLER, S.E., BATESON, J.H., JOSEY, W.L., et al. (1971)
KESLER, S.E., JOSEY, W.L. (1973)
KESLER, S.E., JOSEY, W.L., COLLINS, E.M. (1970)
- JOSEY, W.L., KESLER, S.E.
1969 Metamorphic rocks of the Santa Bárbara-Huehuetenango area, western Guatemala (abs.): *GSA Abs. Prog.* 4, 40-41.
- JOSEY, W.L., KESLER, S.E., STOESSELL, R.K.
1972 *Mapa geológico del cuadrángulo Santa Bárbara*: IGN, Guatemala, 1:50,000.
- JOSEY, W.L., McREE, D.F., WESSON, J.M.
1975 *Mapa geológico del cuadrángulo Nebaj*: IGN, Guatemala, 1:50,000.
- JOUSE, A., KAZARINA, G., MUKHINA, V.
1982 Distribution of diatoms in Pliocene and Pleistocene deposits from the Middle America Trench off Guatemala: *DSDP* 67, p. 455-471.
- JUBERTHIE, C.
DELAMARE, D.C., JUBERTHIE, C. (1975)

K

KAFKA, A.L.

SYKES, L.R., McCANN, W.R., KAFKA, A.L. (1982)

KANAMORI, H.

1979 A semi-empirical approach to prediction of long-period ground motions from strong earthquakes: *SSA* 69, 6, 1645-1670.

JENNINGS, P., KANAMORI, H. (1979)

KANAMORI, H., STEWART, G.

1978 Seismological aspects of the Guatemala earthquake of February 4, 1976: *Intl. symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 113-126), Guatemala City, (Jour. Geophys. Res. 83, 3427-3434).

KARIG, D.E., CARDWELL, R.K., *et al.*

1978 Late Cenozoic subduction and continental margin truncation along the northern Middle America Trench: *GSA Bull.* 89, 265-276.

KAZARINA, G.

JOUSE, A., KAZARINA, G., MUKHINA, V. (1982)

KELLEHER, J., SYKES, L.R., OLIVER, J.

1973 Possible criteria for predicting earthquake locations and their application to major plate boundaries of the Pacific and the Caribbean: *Jour. Geophys. Res.* 78, 14, 2547-2585.

KELLER, M.

ROSE, W.I. Jr., BONIS, S., STOIBER, R.E., KELLER, M., BICKFORD, T. (1973)

KENNETT, J.P., McBIRNEY, A.R., THUNELL, R.C.

1977 Episodes of Cenozoic volcanism in the circum-Pacific region: *Jour. Volc. Geotherm. Res.* 2, 145-163.

KESLER, S.E.

1969 Significance of extensive marble belts to structural and stratigraphic problems in nuclear Central America (abs.): *GSA Abs. Prog.* 7, 123-124.

KESLER, S.E. (cont.)

- 1971 Nature of ancestral orogenic zone in nuclear Central America: *AAPG Bull.* 55, 12, 2116-2129.
- 1972 Western extension of the northern side of the Caribbean Plate: 23 *Int. Geol. Cong.* (Montreal), Sect. 3, 238-244.
- 1973 Basement structural trends in southern Mexico: *GSA Bull.* 84, 3, 1059-1064.
- 1978 Metallogenesis of the Caribbean region: *Jour. Geological Soc.* 135, 4, 429-441.
- BRADFORD, D.E., COLLINS, E.M., SIESSER, W.G., KESLER, S.E. (1968)
- COLLINS, E.M., KESLER, S.E. (1969)
- CUMMINGS, G.L., KESLER, S.E. (1976)
- JOSEY, W.L., KESLER, S.E. (1969)
- JOSEY, W.L., KESLER, S.E., STOESSELL, R.K. (1972)

KESLER, S.E., ASCARRUNZ K. R.

- 1972 Guatemalan lead-zinc mineralization; magmatic-hydrothermal or Mississippi Valley type ? (abs.): *GSA Abs.* 4, 7, 561.
- 1973 Lead-zinc mineralization in carbonate rocks, Central America: *Econ. Geol.* 68, 1263-1274.

KESLER, S.E., ANDERSON, T.H.

- 1972 Exploration guides for Pb-Zn mineralization in the Chiantla District, southern Altos Cuchumatanes, Guatemala: *Carib. Geol. Conf.* 6, p. 141-145.

KESLER, S.E., BATESON, J.H., JOSEY, W.L., et al.

- 1971 Mesoscopic structural homogeneity of Maya Series and Macal Series, Mountain Pine Ridge, British Honduras: *AAPG Bull.* 55, 1, 97-103.

KESLER, S.E., JOSEY, W.L.

- 1973 Comparison of the pre-late Paleozoic basement complex on opposite sides of the Cuilco-Chixoy-Polochic fault zone in western Guatemala and southern Mexico: *ICAITI Pub. Geol.* 4, 115-122.

KESLER, S.E., JOSEY, W.L., COLLINS, E.M.

- 1970 Basement rocks of western Chuacús Group, Guatemala: *GSA Bull.* 81, 3307-3322.

- KESLER, S.E., KIENLE, C.F., BATESON, J.H.
- 1974 Tectonic significance of intrusive rocks in the Maya Mountains, British Honduras: *GSA Bull.* 85, 4, 549-552.
- KIANG, C.
CADLE, R.D., KIANG, C., LOUIS, J. (1976)
- KIENLE, C.F.
KESLER, S.E., KIENLE, C.F., BATESON, J.H. (1974)
- KILBURG, J.
- 1978 Stratigraphy, petrology, and origin of some Tertiary volcanic rocks from the highlands of western Guatemala, Central America (abs.): *EOS* 59, 4, 400.
- 1979 *Geology of Concepción Tutuapa quadrangle, Guatemala, Central America*: Ph.D. Thesis, Univ. Pittsburg, 284p.
- KILBURG, J., ANDERSON, T.H.
- 1978 Preliminary plutonic framework of a multi orogenic terrane, western Guatemala, Central America (abs.): *GSA Abs. Prog.* 10, 6, 258.
- 1979 Basement rocks of western Guatemala: a metamorphosed volcanic-plutonic complex (abs.): *GSA Abs. Prog.* 11, 2, 150.
- KILLIAN, C.
BATES, F., KILLIAN, C. (1982)
- KIM, JUNG JOON
- 1981 *A crustal section of northern Central America as inferred from wide angle reflections from shallow earthquakes*: Ph.D. Thesis, Univ. Texas at Dallas, 111p.
- KIM, JUNG JOON, MATUMOTO, T., LATHAM, G.V.
- 1982 A crustal section of northern Central America as inferred from wide-angle reflections from shallow earthquakes: *SSA Bull.* 72, 3, 925-940.
- KING, P.B.
- 1969 *The tectonics of North America - A discussion to accompany the tectonic map of North America scale 1:5,000,000*: USGS Prof. Pap. 628, 1-95.
- KINOSHITA, W.T.
DECKER, R.W., KINOSHITA, W.T. (1972)

- KIREMIDJIAN, A., SHAH, H.
- 1978 Sensitivity of the seismic hazard predictions for a site in Guatemala: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 221-236), Guatemala City.
- KIREMIDJIAN, A., SHAH, H., LUBETKIN, L.
- 1977 *Seismic hazard mapping for Guatemala*: John A. Blume Earthquake Eng. Cent. Rep. No. 26, 101p.
- KIREMIDJIAN, A., SHAH, H., ZSUTTY, T.
- 1978 Seismic hazard mapping for Guatemala: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 213-220), Guatemala City.
- KLEIN, J.
- BROWN, L., KLEIN, J., MIDDLETON, R., SACKS, I., TERA, F. (1982, 1982)
- KNAPP, J.C.
- CARR, M.J., COX, R.E., KNAPP, J.C., PINEO, C.C., ROSS, J.J. (1969)
- KNUDSON, C.F.
- 1976 Strong-motion recordings of the main event and February 18 aftershock, in Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 23-29.
- 1978 Strong-motion networks for Latin America: *Central American conference on earthquake engineering*, vol. 1, San Salvador, p. 63-85.
- KNUDSON, C.F., PEREZ, V.
- 1978 Guatemalan strong-motion earthquake records: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 189-212), Guatemala City.
- KNUEPFER, P.
- CLUFF, L., COPPERSMITH, K., KNUEPFER, P. (1982)
- KOCH, A.J.
- 1970 *Stratigraphy, petrology and distribution of Quaternary pumice deposits of the San Cristóbal group, Guatemala City area, Guatemala*: Ph.D. Thesis, Univ. Washington, 80p.
- 1974 An unusual Pleistocene ash-flow deposit in south-central Guatemala (abs.): *GSA Abs. Prog.* 6, 3, 203.

- KOCH, A.J., McLEAN, H.
- 1972 Quaternary tephra deposits in the volcanic highlands of Guatemala (abs.): *GSA Abs. Prog.* 4, 3, 184.
- 1977 *Mapa geológico del cuadrángulo Ciudad de Guatemala*: IGN, Guatemala, 1:50,000.
- 1977 *Mapa geológico del cuadrángulo Chimaltenango*: IGN, Guatemala, 1:50,000.
- 1977 Pleistocene tephra and ash-flow deposits in the volcanic highlands of Guatemala: *GSA Bull.* 86, 4, 529-541.
- KOCH, W.
- PAULSEN, S., KOCH, W. (1980)
- KOOSE, F.
- 1978 Estudio de deslizamientos de taludes de barrancos en la Ciudad de Guatemala: *Intl. Symp. 1976 Guatemala earthquake*, vol. 1 (n.p., approx. 408-422), Guatemala City.
- KORNICKER, L.S., BRYANT, W.R.
- 1969 Sedimentation on continental shelf of Guatemala and Honduras, in McBirney, A., ed., *Tectonic relations of northern Central America and the western Caribbean*: AAPG Mem. 11, 244-257.
- KOUTZ, F.R.
- 1971 Boron in Central American volcanic ash and fumarolic condensates: MA Thesis, Dartmouth College, 107p.
- 1971 Boron in Central American volcanic ash and fumarolic condensates (abs.): *EOS* 52, 382-383.
- KRAUSE, J.
- EGGERS, A.A., KRAUSE, J., RUSH, H., WARD, J. (1976, 1977)
- KRINITSKY, E.
- 1978 Geological-seismological factors for specifying motions in the design of future dams in Guatemala: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 1 (n.p., approx. 548-572), Guatemala City.
- KRINITSKY, E., BONIS, S.
- 1976 *Notes on earthquake shaking in soils, Guatemala earthquake of 4 February, 1976*: U.S. Waterways Experiment Station, Vicksburg, Miss., 30p.

- KRUCKOW, T.
1982 Some aspects of the development of Paleocaribbean molluscan faunas: *Brenesia* (Costa Rica) 19-20, 353-357.
- KUBOTA, Y., ITOH, J., INOUE, K.
1981 Geothermal development in the Zunil geothermal field, Guatemala: *Japan Geotherm. Energy Assoc. Jour.* 18, 4, 280-295.
- KUDO, A.M.
PUSHKAR, P., McBIRNEY, A.R., KUDO, A.M. (1972)
- KUENZI, W.D.
HORST, O.H., KUENZI, W.D., McGHEE, R. (1976)
- KUENZI, W.D., HORST, O.H., McGHEE, R.
1979 Effect of volcanic activity on fluvial deltaic sedimentation in a modern arc-trench gap, southwestern Guatemala: *GSA Bull.* 90, 827-836.
- KUENZI, W.D., McGHEE, R.
1972 Texture of river and beach sediments seaward from active volcanic highlands (abs.): *AAPG Bull.* 56, 3, 634.
- KUENZI, W.D., McGHEE, R., ROBYN, T.
1974 Petrology of modern river and beach sediments seaward from active volcanic highlands, southwestern Guatemala (abs.): *GSA Abs. Prog.* 6, 7, 833.
- KUNZE, G.W.
CARSON, C.D., KUNZE, G.W. (1970)
- KUPFER, D.H., GODOY, J.
1967 Strike-slip faulting in Guatemala (abs.): *Am. Geophys. Union Trans.* 48, 215.
- KURNOSOV, V.B., SHEVCHENKO, A.Ya.
1982 Secondary minerals in basalts from the Middle America Trench Leg 67: *DSDP* 67, p. 551-555.
- KURNOSOV, V.B., *et al.*
1982 Mineralogy of sediments from the Middle America Trench: (Guatemala transect): *DSDP* 67, p. 515-528.
- KVENVOLDEN, L., McDONALD, T., *et al.*
1982 Gas hydrates of the Middle American Trench, DSDP 84 (abs.): *EOS* 63, 45, 1015.

L

LADD, J.W.

- 1979 A comparison between examples of volcanic (Guatemala) and nonvolcanic (Hispanola) subduction (abs.): *GSA Abs. Prog.* 11, 7, 462.

IBRAHIM, A.K., LATHAM, G.V., LADD, J.W. (1978, 1979)

SHIPLEY, T.H., LADD, J.W., BUFFLER, R.T., WATKINS, J.S.. (1982)

von HUENE, R., LADD, J.W., NORTON, I. (1982)

LADD, J.W., BUFFLER, R.T., WATKINS, J.S., WORZEL, J.

- 1976 Seismic stratigraphy and geologic history of deep western Gulf of Mexico (abs.): *AAPG Bull.* 60, 4, 690.

LADD, J.W., IBRAHIM, A.K., McMILLEN, K.J., *et al.*

- 1978 Structures and tectonics associated with the Middle America Trench, offshore Guatemala (abs.): *GSA Abs. Prog.* 10, 7, 439.

- 1978 Tectonics of the Middle America Trench offshore Guatemala: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 39-57), Guatemala City, (Univ. Texas Marine Sci. Inst. Contrib. 274, 1-9, Galveston Geophys. Lab.).

- 1982 Interpretation of seismic-reflection data of the Middle America Trench offshore Guatemala: *DSDP* 67, p. 675-689.

LADD, J.W., von HUENE, R.E., WATKINS, J.S.

- 1977 Seismic reflection profiles over the continental margin of Guatemala (abs.): *EOS* 58, 12, 1150.

LADD, J.W., WESTBROOK, G., LEWIS, S.

- 1982 *Subduction tectonics in forearcs; Guatemala vs. Barbados*: Yearbook-Lamont-Doherty Geological Observatory of Columbia University 8, 1, 17-22.

LAL, R.

- 1977 Review of soil erosion research in Latin America, in Greenland, D.J. and Lal, R., eds., *Soil conservation and management in the humid tropics*: New York, John Wiley & Sons, p. 231-240.

LAMARRE, A.L.

BROWN, R.H., LAMARRE, A.L., LAMARRE, R.A., LOUCKS, T.A. (1971)

- LAMARRE, A.L., LAMARRE, R.A., LOUCKS, T.A., BROWN, R.H.
1971 *Geology of the San José Pinula quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 102p.
- LAMARRE, R.A.
BROWN, R.H., LAMARRE, A.L., LAMARRE, R.A., LOUCKS, T.A. (1971)
LAMARRE, A.L., LAMARRE, R.A., LOUCKS, T.A., BROWN, R.H. (1971)
- LANGE, I.M.
BIRNIE, R.W., LANGE, I.M. (1973)
ROSE, W.I. Jr., GRANT, N.K., HAHN, G.A., LANGE, I.M., POWELL, J., EASTER, J., DeGRAFF, J. (1977)
- LANGER, C.J., BOLLINGER, G.A.
1979 Secondary faulting near the terminus of a seismogenic strike-slip fault: aftershocks of the 1976 Guatemala earthquake: *SSA Bull.* 69, 427-444.
- LANGER, C.J., BOLLINGER, G.A., HENRISEY, R.
1978 Aftershocks and secondary faulting associated with the 4 February 1976 Guatemala earthquake: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 147-172), Guatemala City.
- LANGER, C.J., WHITCOMB, J.P., ABURTO, A.
1976 Aftershocks from local data, in Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 30-37.
- LANGMUIR, C., GOLDSTEIN, A., et al.
1981 Nd and Sr isotopic composition of Central American volcanoes (abs.): *EOS* 62, 17, 440.
- LARSON, J.E.
HOLEKAMP, C.P., LARSON, J.E., LUNDSTROM, S.C. (1978)
- LARSON, P.B.
ROSE, W.I. Jr., PENFIELD, G.T., DREXLER, J.W., LARSON, P.B. (1980)
- LARSON, P.B., ROSE, W.I. Jr.
1974 Chemistry of andesites from Tolimán and Atitlán volcanoes, Guatemala (abs.): *EOS* 55, 4, 487.
- LATHAM, G.V.
IBRAHIM, A.K., LATHAM, G.V., LADD, J.W. (1978, 1979)
KIM, JUNG JOON, MATUMOTO, T., LATHAM, G.V. (1982)
MATUMOTO, T., LATHAM, G.V. (1976, 1978)

- LATOUCHE, C., MILLET, N.
1982 X-ray mineralogy studies, Leg 67 (Sites 494-500): the Middle America Trench transect off Guatemala: *DSDP* 67, p. 529-535.
- LATTER, J.
SIMKIN, T., SIEBERT, L., McCLELLAND, L., BRIDGE, D., NEWHALL, C.G., LATTER, J. (1981)
- LAWN, B.
FISHMAN, B., LAWN, B. (1978)
- LAWRENCE, D.P.
1975 *Petrology and structural geology of the Sanarate-El Progreso area, Guatemala*: Ph.D. Thesis, State Univ. New York at Binghamton, 255p.
1976 Tectonic implications of the geochemistry and petrology of the El Tambor Formation, probable oceanic crust in central Guatemala (abs.): *GSA Abs. Prog.* 8, 6, 973-974.
1980 *Mapa geológico del cuadrángulo Sanarate*: IGN, Guatemala, 1:50,000.
- LAZRUS, A.L.
CADLE, R.D., HUEBERT, B.J., LAZRUS, A.L., ROSE, W.I. Jr. (1978)
CADLE, R.D., LAZRUS, A.L., *et al.* (1979)
ROSE, W.I. Jr., CADLE, R.D., LAZRUS, A.L., *et al.* (1979)
SEDLACEK, W., LAZRUS, A.L., GANDRUD, B. (1975)
- LAZRUS, A.L., CADLE, R.D., *et al.*
1979 Sulfur and halogen chemistry of the stratosphere and of volcanic eruption plumes: *Jour. Geophys. Res.* 84, p. 7869-7875.
1979 Trace chemistry of the stratosphere and of volcanic eruption plumes: *Jour. Geophys. Res.* 84, 7869-7875.
- LAZRUS, A.L., HUEBERT, B.J., CADLE, R.D., ROSE, W.I. Jr.
1978 Sulfur and halogen constituents of volcanic eruption clouds (abs.): *EOS* 59, 12, 1222.
- LEA, P.D.
EGGERT, R.G., LEA, P.D. (1978)
- LEDBETTER, M.T.
TAYLOR, J., LEDBETTER, M.T., STORMER, J. Jr. (1981)
DREXLER, J.W., ROSE, W.I. Jr., SPARKS, R., LEDBETTER, M.T. (1978, 1980, 1980)

- LEDBETTER, M.T., SPARKS, R.
1979 Duration of large-magnitude explosive eruptions deduced from graded bedding in deep-sea ash layers: *Geology* 7, 240-244.
- LEDBETTER, M.T., SPARKS, R., ROSE, W.I. Jr.
1978 Duration of explosive volcanism: initial tests of a new model (abs.): *EOS* 59, 4, 312.
- LEE, K.L.
SEED, H.B., LEE, K.L. (1977)
- LEGGETT, D.C.
STOIBER, R.E., LEGGETT, D.C., JENKINS, R.P., MURRMANN, R.P., ROSE, W.I. Jr. (1971)
- LEIGH, R.A., BUIS, O.J., HALL, W.K.
1976 Exploración petrolera en Guatemala (abs.): *Tercer Congr. Latinoam. Geol. Resúmenes*, p. 75.
- LeRUN, J.
COURSAGET, J., LeRUN, J. (1966)
- LEUTZE, W.P.
WILSON, H.H., LEUTZE, W.P. (1974)
- LEVY, E.
1970 *La metalogénesis en América Central*: ICAITI Pub. Geol. 3, 17-57.
DENGIO, G., LEVY, E., BOHNENBERGER, O.H., CABALLEROS, R. (1969)
- LEWIS, S.
LADD, J.W., WESTBROOK, G., LEWIS, S. (1982)
- LIDDICOAT, J.D., DENHAM, C.R., PAULL, C.K.
1981 Paleomagnetism of cored sediment from Lake Atitlán, Guatemala: A preliminary study: *Geof. Intl.* 20, 3, 263-270.
- LINDSAY, D.D.
1975 *The structural geology of the Barillas quadrangle, northwestern Guatemala*: MS Thesis, Univ. Texas at Arlington, 92p.
1976 Structure and timing of orogenic events, Altos Cuchumatanes Mountains, western Guatemala (abs.): *AAPG Bull.* 60, 4, 693.

- LINDSAY, D.D., BURKART, B., FISHER, J.F.
1975 The structure of the Barillas quadrangle, Dept. of Huehuetenango, Guatemala, Central America (abs.): *GSA Abs. Prog.* 7, 2, 109.
- LISOWSKI, M., THATCHER, W., SAVAGE, J.C.
1978 Geodetic determination of horizontal deformation associated with the Guatemala earthquake of February 4, 1976 (abs.): *EOS* 59, 12, 1209.
- LITKE, G.R.
1975 *Stratigraphy and sedimentation of the Barillas quadrangle, Dept. of Huehuetenango, Guatemala, Central America*: MS Thesis, Univ. Texas at Austin, 196p.
- LITKE, G.R., BURKART, B.
1975 New stratigraphic information in the Altos Cuchumatanes Mountains from the Barillas quadrangle, northwestern Guatemala (abs.): *GSA Abs. Prog.* 7, 2, 209-210.
- LOGAN, J.M.
1981 *Laboratory and field investigations of fault gouge*: USGS Open-File Report 81-0883, 85p.
- DENGIO, C.A., LOGAN, J.M. (1977, 1978, 1981, 1981)
- LOMNITZ, C.
REYES, A., MUNGUIA, L., LOMNITZ, C., PONCE, L., JIMENEZ, Z., JIMENEZ, C. (1976)
- LONG, L.E.
CLEMONS, R.E., LONG, L.E. (1971)
- LONSDALE, P.
AUBOUIN, J., STEPHAN, J.F., RENARD, V., ROUMP, J., LONSDALE, P. (1981, 1982)
MOORE, G.F., LONSDALE, P., von HUENE, R. (1982)
RENARD, V., AUBOUIN, J., LONSDALE, P., STEPHAN, J. (1980)
- LOPEZ, C.M.
1983 Early diagenesis of sands and sandstones from Middle America Trench slope, offshore Mexico and Guatemala (abs.): *AAPG* 67, 3, 505.

- LOPEZ-RAMOS, E.
1969 *Geología del sureste de México y norte de Guatemala*: ICAITI
Pub. Geol. 2, 57-67.
- LOPEZ-VEGA, J.
1980 Evaluación económica-petrolera del área Comitán-Pedregal,
Estado de Chiapas: *Asoc. Mex. Geol. Petroleros Bol.* 32, 1, 57-77.
- LOUCKS, T.A.
1973 *Circular structures in Tertiary rocks of eastern Guatemala*: MA
Thesis, Dartmouth College, 98p.
- BROWN, R.H., LAMARRE, A.L., LAMARRE, R.A., LOUCKS, T.A. (1971)
LAMARRE, A.L., LAMARRE, R.A., LOUCKS, T.A., BROWN, R.H. (1971)
- LOUIS, J.
CADLE, R.D., KIANG, C., LOUIS, J. (1976)
- LOVE, M.
ROSE, W.I. Jr., HAHN, G.A., DREXLER, J.W., LOVE, M., PETERSON, P.S.,
WUNDERMAN, R.L. (1981)
- LOVE, M., WUNDERMAN, R.L., ROSE, W.I. Jr.
1980 Fe-Ti oxides of large silicic tephra eruptions, northern Central
America (abs.): *EOS* 80, 61, 6, 66.
- LUBETKIN, L.
KIREMIDJIAN, A., SHAH, H., LUBETKIN, L. (1977)
- LUNDSTROM, S.C.
HOLEKAMP, C.P., LARSON, J.E., LUNDSTROM, S.C. (1978)

M

MACKAY, A.M.

HUGHES, J.M., STOIBER, R.E., IDE, G.M., MAYNARD, S.R.,
MACKAY, A.M. (1980)

IDE, G.M., MACKAY, A.M., MAYNARD, S.R. (1979)

MacVEAN, C., SCHUSTER, J.C.

1981 Altitudinal distribution of Passalid beetles (Coleoptera,
Passalidae) and Pleistocene dispersal on the volcanic chain of
northern Central America: *Biotropica* 13, 1, 29-38.

MALFAIT, B.T., DINKELMAN, M.G.

1972 Circum-Caribbean tectonic and igneous activity and the
evolution of the Caribbean plate: *GSA Bull.* 83, 251-272.

MALINCONICO, L.L.

ROSE, W.I. Jr., STOIBER, R.E., MALINCONICO, L.L. (1979, 1981)

STOIBER, R.E., MALINCONICO, L.L. (1981)

STOIBER, R.E., MALINCONICO, L.L., WILLIAMS, S.N. (1983)

STOIBER, R.E., MALINCONICO, L.L., WILLIAMS, S.N., WINNER, W.E.
(1980)

MALONE, G.C.

DURGIN, D.C., MALONE, G.C., VIKRE, P.C. (1970)

STOIBER, R.E., MALONE, G.C., BRATTON, G. (1978)

MARCUS, D.L.

1974 *Igneous and metamorphic petrology of the Barillas quadrangle,
northwestern Guatemala*: MS Thesis, Univ. Texas at Arlington,
117p.

MARCUS, D.L., BURKART, B., FISCHER, J.F.

1975 Reconnaissance igneous and metamorphic petrology of Barillas
quadrangle, northwestern Guatemala (abs.): *GSA Abs. Prog.* 7,
2, 213.

MARKER, M.E.

1976 Cenotes: A class of enclosed karst holows: *Z. Geomorph.*, N.F.
Suppl. Bd. 26, Karst processes, p. 104-123.

MARQUEZ, D.

ENDO, E.T., WARD, P.L., MARQUEZ, D., ALLEN, R.V., HARLOW, D.H.
(1973)

- MARTIN, D.P.
- 1979 *Historic activity of Fuego Volcano, Guatemala: constraints on the nature of the subsurface magma body and processes therein*: MS Thesis, Michigan Technol. Univ., 87p.
- 1980 The historic activity of Fuego Volcano, Guatemala: constraints on the subsurface magma bodies and processes therein (abs.): *EOS* 61, 6, 69.
- MARTIN, D.P., ROSE, W.I. Jr.
- 1981 Behavioral patterns of Fuego Volcano, Guatemala: *Jour. Volc. Geotherm. Res.* 10, 1-3, 67-81.
- MARTIN, R.G.
- ANTOINE, J.W., MARTIN, R.G., PYLE, T.G., et al. (1974)
- MARTINI, J., JARAMILLO, L.
- 1975 Soils derived from volcanic ash in Central America: 2, Soils more developed than Andepts: *Soil Sci.* 120, 5, 376-384.
- MARTINI, J., PALENCIA, J.
- 1975 Soils derived from volcanic ash in Central America; 1, Andepts: *Soil Sci.* 120, 4, 278-287.
- MARTINO, O., HYDE, D., VELASCO, D.
- 1981 *Mineral industries of Latin America*: U.S. Bur. Mines Mineral Perspectives, 116p.
- MASON, J.F.
- CONNAN, J., MASON, J.F. (1981)
- MASTERS, C.D., PETERSON, J.A.
- 1981 *Assessment of conventionally recoverable petroleum resources of southeastern Mexico, northern Guatemala, and Belize*: USGS Open-File Report, no. 81-1144, 8p.
- MATUMOTO, T.
- KIM, JUNG JOON, MATUMOTO, T., LATHAM, G.V. (1982)
- MATUMOTO, T., LATHAM, G.V.
- 1976 Aftershocks of the Guatemalan earthquake of February 4, 1976: *Geophys. Res. Lett.* 3, 599-602.

- MATUMOTO, T., LATHAM, G.V. (cont.)
- 1978 Distribution of aftershocks following the Guatemala earthquake of February 4, 1976 and its tectonic aspects - interplate and intraplate seismic activity: *Intl. Symp. 1976 Guatemala earthquake*, vol. 2 (n.p., approx. 127-146), Guatemala City.
- MAURY, R.C., *et al.*
- 1982 Volcanic rocks from Leg 67 sites; mineralogy and geochemistry: *DSDP 67*, p. 557-576.
- MAYFIELD, D.G.
- CARR, M.J., ROSE, W.I. Jr., MAYFIELD, D.G. (1979)
- MAYNARD, S.R.
- HUGHES, J.M., STOIBER, R.E., IDE, G.M., MAYNARD, S.R., MACKAY, A.M. (1980)
- IDE, G.M., MACKAY, A.M., MAYNARD, S.R. (1979)
- McBIRNEY, A.R.
- 1969 Compositional variations in Cenozoic calc-alkaline suites of Central America: *Intl. Upper Mantle Project Sci. Rep.* No. 16, Oregon Dept. Geol. Bull. 65, p. 185-189.
- 1969 (*Editor*), *Tectonic relations of northern Central America and the western Caribbean - The Bonacca Expedition*: AAPG Mem. 11, 199-280.
- 1970 Andesites of North and Central America: *Geol. Soc. London Proc.* 1969, no. 1662, p. 30-36.
- GOMBERG, D.M., BANKS, P.O., McBIRNEY, A.R. (1968)
- KENNETT, J.P., McBIRNEY, A.R., THUNELL, R.C. (1977)
- PUSHKAR, P., McBIRNEY, A.R., KUDO, A.M. (1972)
- WILLIAMS, H., McBIRNEY, A.R. (1969, 1979)
- McBIRNEY, A.R., AOKI, K., BASS, M.N.
- 1967 Eclogites and jadeite from the Motagua fault zone, Guatemala: *Am. Mineral.*, 52, 5-6, 908-918.
- McBIRNEY, A.R., BASS, M.N.
- 1969 Structural relations of the pre-Mesozoic rocks of northern Central America: *AAPG Mem.* 11, 269-280.
- 1969 Geology of Bay Islands, Gulf of Honduras: *AAPG Mem.* 11, 229-243.

- McBIRNEY, A.R., WEILL, D.F.
1966 Rhyolite magmas of Central America: *Bull. Volc.* 29, 435-446.
- McCANN, W.R.
SYKES, L.R., McCANN, W.R., KAFKA, A.L. (1982)
- McCLELLAND, L.
1976 Glowing avalanche deposits from the October, 1974 eruption of Volcán Fuego, Guatemala (abs.): *EOS* 57, 4, 346.
1976 *Some glowing avalanche deposits from the 1974 eruption of Volcán Fuego, Guatemala*: MA Thesis, Dartmouth College, 113p.
SIMKIN, T., SIEBERT, L., McCLELLAND, L., BRIDGE, D., NEWHALL, C.G., LATTER, J. (1981)
- McDONALD, R.
1976 *Hillslope base depressions in Tower karst topography of Belize*: Z. Geomorphol. N.F., Suppl. Bd. 26, Karst processes, p. 98-103.
- McDONALD, T.
KVENVOLDEN, L., McDONALD, T., et al. (1982)
- McDONALD, W.D.
1976 *The importance of Central America to the tectonic evolution of the Caribbean*: ICAITI Pub. Geol. 5, 24-30.
- McDOUGALL, I.
RUXTON, B., McDOUGALL, I. (1967)
- McDOWELL, B.
1976 Earthquake in Guatemala: *National Geographic Magazine* (Washington, D.C.) 149, 6, 810-829.
- McDOWELL, F.W.
RITCHIE, A.W., McDOWELL, F.W. (1979)
- McGETCHIN, T.R.
EICHELBERGER, J.C., McGETCHIN, T.R. (1976)
EICHELBERGER, J.C., McGETCHIN, T.R., FRANCIS, P.W. (1973)
WOULFF, G., McGETCHIN, T.R. (1976)
- McGHEE, R.
HORST, O.H., KUENZI, W.D., McGHEE, R. (1976)
KUENZI, W.D., HORST, O.H., McGHEE, R. (1979)
KUENZI, W.D., McGHEE, R. (1972)
KUENZI, W.D., McGHEE, R., ROBYN, T. (1974)

- McKEE, T.
ASKENASY, P., DIXON, J., McKEE, T. (1973)
- MCLEAN, H.
1970 *Stratigraphy, mineralogy, and distribution of the Sumpango group pumice deposits in the volcanic highlands of Guatemala*: Ph.D. Thesis, Univ. Washington, 90p.
- KOCH, A.J., MCLEAN, H. (1972, 1977, 1977, 1977)
- McMILLEN, K.J.
1979 Radiolarian ratios and the Pleistocene-Holocene boundary: *Gulf Coast Assoc. Geol. Soc. Trans.* 29, 298-301.
- LADD, J.W., IBRAHIM, A.K., McMILLEN, K.J., et al. (1978, 1978, 1982)
WATKINS, J.S., McMILLEN, K.J., et al. (1982)
- McMILLEN, K.J., BUFFLER, R.T., MOORE, J.C., et al.
1978 Sedimentation in the Middle America Trench off Oaxaca, Mexico and Guatemala (abs.): *Intl. Cong. Sedimentology* 10, 2, 434, Jerusalem.
- McMILLEN, K.J., ENKEBOLL, R., et al.
1982 Sedimentation in different tectonic environments of the Middle America Trench, southern Mexico and Guatemala, in Leggett, J., ed., *Trench-forearc geology*: Geol. Soc. London Spec. Pub. 10, 107-119.
- MCNALLY, K., MINSTER, J.
1981 Nonuniform seismic slip rates along the Middle America Trench: *Jour. Geophys. Res.* 86, B6, 4949-4959.
- MCNUTT, S.R., HARLOW, D.H.
1983 Seismicity at Fuego, Pacaya, Izalco, and San Cristóbal Volcanoes, Central America, 1973-1974: *Bull. Volc.* 46, 3, 283-297.
- MCREE, D.F.
1969 *Paleozoic stratigraphy and structural geology of the Nebaj quadrangle, Guatemala*: MS Thesis, Louisiana State Univ., 68p.
JOSEY, W.L., MCREE, D.F., WESSON, J.M. (1975)
- MEINEL, A.B., MEINEL, M.P.
1975 Stratospheric dust-aerosol event of November 1974: *Science* 188, 477-478.

MEINEL, M.P.

MEINEL, A.B., MEINEL, M.P. (1975)

MENENDEZ O., R.

1982 Seismic risk analysis in Guatemala: *Intl. Inst. Seism. Earthquake Eng.* 18, 1-14, Japan.

MEYERHOFF, A.A.

1966 Bartlett fault system: age and offset: *Carib. Geol. Conf.* 3, Trans., Geological Survey Department, Kingston, Jamaica, p. 1-9.

1967 Future hydrocarbon provinces of Gulf of Mexico-Caribbean region: *Gulf Coast Assoc. Geol. Soc. Trans.* 17, 217-260.

1973 Diapirlike features offshore Honduras: Implications regarding tectonic evolution of Cayman Trough and Central America: Discussion, *GSA Bull.* 84, 6, 2147-2152.

MEYERHOFF, A.A., MEYERHOFF, H.A.

1972 Continental drift, IV: The Caribbean "plate": *Jour. Geology* 80, 1, 34-60.

MEYERHOFF, A.A., MORRIS, A.E.L.

1977 Central America petroleum potential centered mostly in Mexico: *Oil and Gas Jour.*, Oct. 17, 104-109.

MEYERHOFF, H.A.

MEYERHOFF, A.A., MEYERHOFF, H.A. (1972)

PAIN, W.R., MEYERHOFF, H.A. (1970)

MEYERS, T.

HAHN, G.A., ROSE, W.I. Jr., MEYERS, T. (1979)

MICHEL, H.

STROSS, F., SHEETS, P., ASARO, F., MICHEL, H. (1983)

MICHELS, J.W.

1982 Bulk element composition versus trace element composition in the reconstruction of an obsidian source system: *Jour. Archaeological Sci.* 9, 2, 113-123.

MIDDLETON, R.

BROWN, L., KLEIN, J., MIDDLETON, R., SACKS, I., TERA, F. (1982, 1982)

MILES, R.C.

1977 *Modifications of sediment composition and texture in two fluvial systems, Guatemala*: MA Thesis, Univ. Missouri at Columbia, 91p.

DAVIES, D.K., VESSELL, R.K., MILES, R.C., FOLEY, M.G., BONIS, S. (1978)

MILES, R.C., DAVIES, D.K., BONIS, S.

1977 Downstream modification of texture and composition in basaltic and acidic sediments, Guatemala (abs.): *GSA Abs. Prog.* 9, 5, 634.

MILLAN, S.M., FARLEY, R.A.

1979 New Guatemala tracts described: *Oil and Gas Jour.*, Dec. 10, 100-102.

MILLER, R.

1976 *Potencial de los minerales industriales en Centroamerica*: ICAITI Pub. Geol. 5, 180-185.

MILLET, N.

LATOUCHE, C., MILLET, N. (1982)

MINING ANNUAL REVIEW (Guatemala)

1966-1983 (1966, p. 203)

(1967, p. 217)

(1968, p. 261)

(1969, p. 262-263)

(1970, p. 310)

(1971, p. 313-314)

(1972, p. 317-319)

(1973, p. 319-321)

(1974, p. 332-333)

(1975, p. 349, 351)

(1976, p. 353, 356)

(1977, p. 359, 361, 363)

(1978, p. 399, 402)

(1979, p. 378)

(1980, p. 407)

(1981, p. 386-387)

(1982, p. 357)

(1983, p. 327)

- MINSTER, J.
McNALLY, K., MINSTER, J. (1981)
- MOLNAR, P., SYKES, L.R.
1969 Tectonics of the Caribbean and Middle America regions from focal mechanisms and seismicity: *GSA Bull.* 80, 1639-1684.
- MONGES CALDERA, J.
WOOLARD, G., MONGES CALDERA, J., *et al.* (1966)
- MONGES CALDERA, J., JACHENS, R., ANDRADE, D., CASE, J.E.
1976 Comparison of gravity measurements before and after the 1976 Guatemala earthquake (abs.): *EOS* 57, 12, 949.
- MOORBATH, S.
THORPE, R.S., FRANCIS, P.W., MOORBATH, S. (1979)
- MOORE, C.H. Jr.
BLOUNT, D.N., MOORE, C H Jr. (1969)
- MOORE, G.F., LONSDALE, P., von HUENE, R.
1982 Near-bottom observations of the Middle America Trench off Guatemala: *DSDP* 67, p. 707-718.
- MOORE, J.C.
McMILLEN, K J , BUFFLER, R T , MOORE, J.C , *et al.* (1978)
- MOORE, M.P.
1977 *The sediments of Lake Izabal, Guatemala, C.A.*: MS Thesis, Univ. Florida.
- MORRIS, D.F., GHARIB, A., SABER, H.
1980 Distribution of lanthanum, europium, germanium, tin, phosphorus, and sulphur in nickeliferous lateritic profiles: *Mineral. Mag.* 43, 330, 816-820.
- MORENO, G.
BURKART, B., MORENO, G. (1983)
- MORRIS, A.E.L.
MEYERHOFF, A.A., MORRIS, A.E.L. (1977)
- MORRIS, D.F.
GHARIB, A., MORRIS, D.F. (1978)
- MOTTO, H.
PRASAD, S., MOTTO, H. (1981, 1982, 1982)

- MUEHLBERGER, W.R., RITCHE, A.W.
1975 Caribbean-Americas plate boundary in Guatemala and southern Mexico as seen on Skylab IV orbital photography: *Geology* 3, 232-235.
- MUKHINA, V.
JOUSE, A., KAZARINA, G., MUKHINA, V. (1982)
- MÜLLER, A.
BOOM, G., Van Den, MÜLLER, A., NICOLAUS, H. (1981)
BOOM, G., Van Den, MÜLLER, A., NICOLAUS, H., PAULSEN, S. (1971)
NICOLAUS, H.J., MÜLLER, A. (1979)
- MÜLLER, A., NICOLAUS, H.J.
1979 *Mapa geológico del cuadrángulo Los Pajales*: IGN, Guatemala, 1:50,000.
- MULLER, P.D.
1979 *Geology of the Los Amates quadrangle and vicinity, Guatemala, C.A.*: Ph.D. Thesis, State Univ. New York at Binghamton, 326p.
- 1981 La Pita Complex: implications for Cretaceous subduction along the central Motagua Valley, Guatemala (abs.): *GSA Abs. Prog.* 13, 2, 98.
- MUNGUIA, L.
REYES, A., MUNGUIA, L., LOMNITZ, C., PONCE, L., JIMENEZ, Z., JIMENEZ, C. (1976)
- MUÑOZ, P., VELASQUEZ, V., ARAGON, C., et al.
1978 *Estudio de aguas subterráneas en el Valle de la Ciudad de Guatemala; informe final*: INSIVUMEH, Guatemala, 303p.
- MURRAY, G.E.
1976 New oil province, Guatemala and southeastern Mexico: 25th Int. *Geol. Cong. Abs.* 1, 249-250.
- MURRAY, J.
SAWLAN, J., MURRAY, J. (1983)
- MURRMANN, R.P.
STOIBER, R.E., LEGGETT, D.C., JENKINS, R.P., MURRMANN, R.P., ROSE, W.I. Jr. (1971)
- MURROW, P.J.
ROSE, W.I. Jr., MURROW, P.J., SELF, S. (1980)

MURROW, P.J., ROSE, W.I. Jr.

1980 Total grain size distribution of ejecta from Fuego Volcano,
Guatemala, its use to estimate amounts of stratospheric
injection: *EOS* 61, 6, 66.

MUSGROVE, P.

GRUMWELD, J., MUSGROVE, P. (1970)

MUXART, R.

CORBEL, J., MUXART, R. (1970)

MUZYLÖV, N.

1982 Nannoplankton stratigraphy of Leg 67 drill sites: *DSDP* 67, p.
383-399.

N

- NABELEK, J.
TOKSOZ, M., NABELEK, J., HONG, Y. (1983)
- NAGASAWA, C.
HIRONO, M., FUJIWARA, M., ITABE, T., NAGASAWA, C. (1977)
- NAGLE, F., ROSENFIELD, J., STIPP, J.J.
1977 *Guatemala, where plates collide: a reconnaissance guide to Guatemalan geology*: Miami Geol. Soc., 72p.
- NEIRA, H.C.
1970 *Las crecidas de los ríos Achiguate y Guacalate en septiembre de 1969*: Publ. 49, PHCA, San José, Costa Rica, (julio de 1970), 63p.
- NEWCOMB, W.E.
1973 Late Paleozoic tectonics of the Motagua fault; a subduction-collision scar? (abs.): *EOS* 54, 4, 471-472.
1974 Possible tectonic significance of structures in metamorphic rocks north of Motagua fault zone, east-central Guatemala (abs.): *Carib. Geol. Conf.* 7, Guadalupe, p. 49.
1975 *Geology, structure and metamorphism of the Chuacús group, Río Hondo quadrangle and vicinity, Guatemala*: Ph.D. Thesis, State Univ. of New York at Binghamton, 114p.
1977 Mylonitic and cataclastic rocks from the Motagua fault zone, Guatemala (abs.): *Carib. Geol. Conf.* 8, 141-142.
1978 Retrograde cataclastic gneiss north of the Motagua fault zone, east-central Guatemala: *Geol. en Mijnbouw* 57, 2, 271-276.
1978 *Mapa geológico del cuadrángulo Río Hondo*: IGN, Guatemala, 1:50,000.
- SCHWARTZ, D.P., NEWCOMB, W.E. (1973)
- NEWHALL, C.G.
1981 *Geology of the Lake Atitlán Area, Guatemala*: Ph.D. Thesis, Dartmouth College, 363p.

- NEWHALL, C.G. (cont.)
POPPE, L.J., PAULL, C.K., NEWHALL, C.G. (1981)
SIMKIN, T., SIEBERT, L., McCLELLAND, L., BRIDGE, D., NEWHALL, C.G.,
LATTER, J. (1981)
- NEWHALL, C.G., SELF, S., PAULL, C.K.
1980 Preliminary geological and geophysical studies on the Atitlán
Caldera, Guatemala (abs.): *EOS* 61, 6, 69.
- NICOLAUS, H.J.
1973 Beitraege zur Geologie Guatemala (Kurzfassung): Münster.
Forsch. Geol. Paläont. no. 31-32, Neuere Ergebnisse der Geol.
Erforschung Latinamerikas, p. 287-288.
- BOOM, G., Van Den, MÜLLER, A., NICOLAUS, H.J. (1981)
BOOM, G., Van Den, MÜLLER, A., NICOLAUS, H.J., PAULSEN, S. (1971)
MÜLLER, A., NICOLAUS, H.J. (1979)
- NICOLAUS, H.J., MÜLLER, A.
1979 *Mapa geológico del cuadrángulo Tactic*: IGN, Guatemala,
1:50,000.
- NIELSON, D.
1972 *A critical analysis of the potassium content vs. depth relationship
of andesitic lavas in subduction zones*: MA Thesis, Dartmouth
College, 44p.
- NIELSON, D., STOIBER, R.E.
1973 Relationship of potassium content in andesitic lavas and depth
to seismic zone: *Jour. Geophys. Res.* 78, 29, 6887-6892.
- NIEVENS, M.
CARRIVEAU, G W., NIEVENS, M. (1979)
- NORTON, I.
von HUENE, R., LADD, J.W., NORTON, I. (1982)
- NUR, A.
AYDIN, A., NUR, A. (1982)

O

OLIVER, J.

KELLEHER, J., SYKES, L.R., OLIVER, J. (1973)

OWEN, E.W.

1975 *Trek of the oil finders: a history of exploration for petroleum:*
(Guatemala), AAPG Mem. 6, p. 980-983, 998-1004.

P

PAGE, R., STIMSON, J., STRUHSACKER, E.

- 1973 *Geology of the northern portion of the Nueva Santa Rosa quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 58p.

PAINÉ, W.R., MEYERHOFF, H.A.

- 1970 Gulf of Mexico basin: interactions among tectonics, sedimentation, and hydrocarbon accumulation: *Gulf Coast Assoc. Geol. Soc. Trans.* 20, 5-44.

PALENCIA, J.

MARTINI, J., PALENCIA, J. (1975)

PARSONS, W.H.

- 1970 Current status of Central American volcanoes (abs.): *EOS* 51, 4, 440.

- 1979 Volcanoes of Guatemala: *The Explorer* 21, 4, 4-11.

PASQUARÉ, G.

BETHANCOURT, H., DOMINICO, E., GIRELLI, M., PASQUARÉ, G. (1977)

PATCHICK, P.F.

- 1968 Ground-water research in Central America completed: *Water Well Jour.* 22, 10, 32-33.

PAULL, C.K.

LIDDICOAT, J.D., DENHAM, C.R., PAULL, C.K. (1981)

NEWHALL, C.G., SELF, S., PAULL, C.K. (1980)

POPPE, L.J., PAULL, C.K., NEWHALL, C.G. (1981)

PAULSEN, S.

- 1976 *Mapa geológico del cuadrángulo Cobán*: IGN, Guatemala, 1:50,000.

- 1976 *Mapa geológico del cuadrángulo Tiritibol*: IGN, Guatemala, 1:50,000.

- 1980 *Mapa geológico del cuadrángulo Tucurú*: IGN, Guatemala, 1:50,000.

- PAULSEN, S. (cont.)
BOOM, G., Van Den, MÜLLER, A., NICOLAUS, H., PAULSEN, S. (1971)
- PAULSEN, S., KOCH, W.
1980 Die marine Kreide in Teilen der Alta Verapaz und der Baja Verapaz, Guatemala: *Geologische Jahrbuch*, Reihe B, Heft 38, 3-87, Hanover.
- PEARSON, T.
ROSE, W.I. Jr., PEARSON, T., BONIS, S. (1977)
- PENFIELD, G.T.
ROSE, W.I. Jr., PENFIELD, G.T., DREXLER, J.W., LARSON, P.B. (1980)
- PEREZ, V.
KNUDSON, C.F., PEREZ, V. (1978)
- PERFIT, M., HEEZEN, B.
1978 The geology and evolution of the Cayman Trench: *GSA Bull.* 89, 8, 1155-1174.
- PERSON, W.J.
DEWEY, J.W., PERSON, W.J. (1976)
SPENCE, W., PERSON, W.J. (1976)
- PERSON, W.J., (ed.)
1983 Seismological notes; September-October, 1982: *SSA Bull.* 73, 4, 1265-1268.
- PERSON, W.J., SPENCE, W., DEWEY, J.W.
1976 Main event and principal aftershocks from teleseismic data, in Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 17-18.
- PETERSEN, E.U.
1979 *The Oxec copper deposit, Guatemala: an ophiolite copper occurrence*: MA Thesis, Dartmouth College, 116p.
- PETERSEN, E.U., ZANTOP, H.
1980 The Oxec deposit, Guatemala: an ophiolite copper occurrence: *Econ. Geol.* 75, 7, 1053-1065.
- PETERSON, J.A.
1983 *Petroleum geology and resources of southeastern Mexico, northern Guatemala, and Belize*: USGS Circular 760, 44p.
- MASTERS, C.D., PETERSON, J.A. (1981)

PETERSON, P.S.

- 1980 *Tephra of the Laguna de Ayarza Calderas of southeastern Guatemala and its correlation to units of the Guatemalan highlands*: MS Thesis, Michigan Technol. Univ., 108p.

- ROSE, W.I. Jr., HAHN, G.A., DREXLER, J.W., LOVE, M., PETERSON, P.S., WUNDERMAN, R.L. (1981)

PETERSON, P.S., ROSE, W.I. Jr.

- 1980 Dating of caldera-forming eruptions at Ayarza, Guatemala and correlation of its Plinian tephra units (abs.): *EOS* 61, 6, 66.

PICHLER, H., WEYL, R.

- 1973 Petrochemical aspects of Central American magmatism: *Geol. Rundschau* 62, 357-396.

- 1976 Quaternary alkaline volcanic rocks in eastern Mexico and Central America: *Münster. Forsch. Geol. Paläont.*, H38/39, p. 159-178.

PINEO, C.C.

- CARR, M.J., COX, R.E., KNAPP, J.C., PINEO, C.C., ROSS, J.J. (1969)

PINET, P.R.

- 1972 Diapirlike features offshore Honduras: Implications regarding tectonic evolution of Cayman Trough and Central America: *GSA Bull.* 83, 7, 1911-1922.

PLAFKER, G.

- 1976 Tectonic aspects of the Guatemala earthquake of 4 February 1976: *Science* 193, 4259, 1201-1208.

- 1978 Tectonic significance of surface faulting related to the 4 February 1976 Guatemala earthquake: *Intl. Symp. 1976 Guatemala earthquake*, vol. 1 (n.p., approx. 187-205), Guatemala City.

- BUCKNAM, R.C., PLAFKER, G., SHARP, R.V. (1978, 1978)

PLAFKER, G., BONILLA, M., BONIS, S.

- 1976 Geologic effects, in Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 38-51.

- PLAFKER, G., SHARP, R.V., BUCKNAM, R.C., BONIS, S.,
BONILLA, M.
- 1976 Tectonic implications of surface faulting associated with the 4
February 1976 Guatemala earthquake (abs.): *GSA Abs. Prog.*
8, 6, 1051-1052.
- PONCE, L.
- REYES, A., MUNGUA, L., LOMNITZ, C., PONCE, L., JIMENEZ, Z.,
JIMENEZ, C. (1976)
- POPPE, L.J., PAULL, C.K., NEWHALL, C.G.
- 1981 *X-ray mineralogy of cores from two Guatemalan caldera lakes:*
USGS Open-File Report 81-1333, 8p.
- POREDA, R.J.
- 1983 *Helium, neon, water, and carbon in volcanic rocks and gases:*
Ph.D. Thesis, Univ. California at San Diego, 235p.
- POUGH, F.H.
- 1980 Nuée ardente eruptions and Mt. St. Helens: *Lapidary Journal*
34, 9, 1972-1977.
- POWELL, J.
- ROSE, W.I. Jr., GRANT, N.K., HAHN, G.A., LANGE, I.M., POWELL, J.,
EASTER, J., DeGRAFF, J. (1977)
- PRASAD, S., HESSE, R.
- 1982 Provenance of detrital sediments from the Middle America
Trench transect off Guatemala, DSDP Leg 67: *DSDP 67*, p.
507-514.
- PRASAD, S., MOTTO, H.
- 1981 Evaluation of P as a limiting macronutrient in volcanic ash soils
of Guatemala: *Soil Sci. Plant Analysis Communications* 12, 10,
1021-1029.
- 1982 Retention of applied P by volcanic ash soils; influence on
available P and soluble Al: *Soil Sci. Plant Analysis Communications* 13,
6, 441-452.
- 1982 Influence of applied P on the cation exchange capacity of
volcanic ash soils: *Soil Sci. Plant Analysis Communications* 13,
6, 435-439.

- PRATER, E.
BOSSONEY, C., PRATER, E., *et al.* (1981)
- PRIESTLY, K.F.
CHAVEZ, D.E., PRIESTLY, K.F. (1978)
- PROBERT, A.
1971 A lost art rediscovered: Primitive smelting in Central America:
Journal of the West 10, 1, 116-128.
- PROTSCH, R.
BERGER, R., DeATLEY, S., PROTSCH, R., WILLEY, G.R. (1974)
- PURDY, E.G.
1974 Karst-determined facies patterns in British Honduras: Holocene
carbonate sedimentation model: *AAPG Bull.* 58, 825-855.
- PUSHKAR, P.
1968 Strontium isotope ratios in volcanic rocks of three island arc
areas: *Jour. Geophys. Res.* 73, 2701-2714.
HORNE, G. CLARK, G., PUSHKAR, P. (1976)
- PUSHKAR, P., McBIRNEY, A.R., KUDO, A.M.
1972 The isotopic composition of strontium in Central America
ignimbrites: *Bull. Volc.* 35, 265-294.
- PYLE, T.G.
ANTOINE, J.W., MARTIN, R G., PYLE, T G., *et al.* (1974)

Q

QUEARRY, M.W.

1975 *Continental volcanic sediments in the region of Volcán de Fuego, Guatemala*: MA Thesis, Univ. Missouri at Columbia, 105p.

DAVIES, D.K., COMBS, M.J., QUEARRY, M.W., BONIS, S. (1975)

DAVIES, D.K., QUEARRY, M.W., BONIS, S. (1976, 1978)

QUESADA, A.

ESPINOSA, A.F., ASTURIAS, J., QUESADA, A. (1978)

ESPINOSA, A.F., HUSID, R., QUESADA, A. (1976)

HUSID, R., ESPINOSA, A.F., QUESADA, A. (1976)

R

- RALPH, E.K.
STUCKENRATH, R. Jr., COE, W.R., RALPH, E.K. (1966)
- REASENBURG, P., CHOUET, B., WOULFF, G.
1973 Summit activity at Acatenango Volcano, Guatemala (abs.): *EOS* 54, 4, 510.
- REBILLARD, P., DIXON, T., FARR, T.
1982 Geologic observation of the northern boundary of the Caribbean plate across Central America as seen by SEASAT and SIR-A: *Proc. Intl. Symp. Commission VII, Intl. Soc. Photogrammetry Remote Sensing*, Toulouse, France, 1982, p. 593-599.
- RECINOS, C.E.
1976 *Exploración minera en área 3, Sierra de las Minas, reconocimiento geoquímico regional*: ICAITI Pub. Geol. 5, 186-205.
- REEVES, T.K. Jr.
1967 *Geology of the southern half of the El Progreso quadrangle, El Progreso, Guatemala*: MA Thesis, Rice Univ., 87p.
- RENARD, V.
AUBOUIIN, J., STEPHAN, J.F., RENARD, V., ROUMP, J., LONSDALE, P.
(1981, 1982)
AUBOUIIN, J., STEPHAN, J.F., ROUMP, J., RENARD, V. (1982)
- RENARD, V., AUBOUIIN, J., LONSDALE, P., STEPHAN, J.
1980 *Premiers résultats d'une étude de la fosse d'Amérique centrale au sondeur multifaisceaux (Seabeam)*: C.R. Acad. Sci. Paris, Ser. D, 291, p. 137-142.
- REYES, A., MUNGUIA, L., LOMNITZ, C., PONCE, L., JIMENEZ, Z.,
JIMENEZ, C.
1976 The February 1976 Guatemala earthquake: an aftershock survey (abs.): *EOS* 58, 5, 308.
- REYNOLDS, J.C.
CLOHAN, G.M., REYNOLDS, J.C. (1977)

- REYNOLDS, J.H.
- 1975 (Editor), *Geology of the Nueva Santa Rosa quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 81p.
- 1977 *Tertiary volcanic stratigraphy of northern Central America*: MA Thesis, Dartmouth College, 89p.
- 1980 Late Tertiary volcanic stratigraphy of northern Central America: *Bull. Volc.* 43, 3, 601-608.
- 1983 Cenozoic volcanic stratigraphy of south-central Guatemala (abs.): *GSA Abs. Prog.* 15, 2, 63.
- DOBSON, D.C., HITZMAN, M., REYNOLDS, J.H., ERLER, E.L. (1977)
- REYNOLDS, J.H., DANN, J.C.
- 1975 *Geology of the southeastern portion of the Cuilapa quadrangle, Guatemala*: Senior Honors Thesis, Dartmouth College, 50p.
- REYNOLDS, M.J.
- DOTT, R.H. Sr., REYNOLDS, M.J. (1969)
- RICHARDS, M.L.
- BANKS, N.G., RICHARDS, M.L. (1969)
- RICHARDS, P.W.
- ADDICOT, W., RICHARDS, P.W. (compilation coordinators) (1981)
- RIDER, J.
- HARPER, H., RIDER, J., ABBOT, W. (1982)
- RIEDEL, W.R.
- WESTBERG, M.J., RIEDEL, W.R. (1982)
- RIGOT, W.
- WOODRUFF, L.G., ROSE, W.I. Jr., RIGOT, W. (1979)
- RINEHART, W., GANSE, R., *et al.*
- 1982 *Seismicity of Middle America (Map)*: National Geophysical Data Center, NOAA, Boulder, Colorado, 1:8,000,000.
- RITCHIE, A.W.
- 1975 *Jocotán fault - possible western extension*: ICAITI Pub. Geol. 5, 52-55.
- 1975 *Geology of the San Juan Sacatepéquez quadrangle, Guatemala*: Ph.D. Thesis, Univ. Texas at Austin, 119p.

RITCHIE, A.W. (cont.)

- 1981 *Mapa geológico del cuadrángulo San Juan Sacatepéquez*: IGN, Guatemala, 1:50,000.

MUEHLBERGER, W.R., RITCHE, A.W. (1975)

SMITH, D.S., RITCHIE, A.W. (1981)

RITCHIE, A.W., McDOWELL, F.W.

- 1979 K-Ar ages of plutonic and volcanic rocks from the volcanic highlands of Guatemala, northwest of Guatemala City: *Isochron/West* 25, 3-4.

ROBERTS, A.A., DONOVAN, T.J., DALZIEL, M., FORGEY, R.L.

- 1978 Application of helium surveys to petroleum exploration (abs.): *USGS Prof. Pap.* 1100, p. 24.

ROBYN, T.

KUENZI, W.D., McGEHEE, R., ROBYN, T. (1974)

RODRIQUEZ BEJARANO, D.

- 1976 The teaching of photo-interpretation and photogrammetry in the field of natural resources in Central America and Mexico: *Am. Soc. Photogramm.*, Ann. Mtg., Proc. No. 42, p. 430-442.

ROPER, P.G.

- 1973 Structural relationships between the southwestern portion of the Sierra de las Minas Mountains and the Motagua fault zone in Central America (abs.): *EOS* 54, 11, 1206.
- 1974 Geologic comparison between Brevard zone and the Motagua fault zone of Guatemala (abs.): *GSA Abs. Prog.* 6, 4, 393.
- 1974 Geologic relationships between the Motagua fault zone and the Sierra de las Minas range near El Progreso, Guatemala (abs.): *Carib. Geol. Conf.*, 7, Guadalupe, p. 59.
- 1976 Lithologic subdivision of the Chuacús Group in the southwestern end of the Sierra de las Minas Range, Guatemala: *Carib. Geol. Conf.*, 7, Guadalupe, 589-594.
- 1978 Stratigraphy of the Chuacús Group in the south side of the Sierra de las Minas range, Guatemala: *Geol. en Mijnbouw* 57, 309-313.

ROPER, P.G. (cont.)

- 1978 Geology of El Progreso quadrangle north of the Motagua River: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 89-97), Guatemala City.
- 1978 Paleozoic deformation of the Chuacús Group in the Sierra de las Minas range, Guatemala: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 98-112), Guatemala City.
- 1978 Structural fabric of serpentinite and amphibolite along the Motagua fault zone in El Progreso quadrangle, Guatemala: *Gulf Coast Assoc. Geol. Soc. Trans.* vol. 28, part 2, 57-84.
- ROSE, W.I. Jr.
- 1967 Notes on fumaroles and recent activity of Volcán Pacaya, in Bonis, S., ed., *Excursion guide book for Guatemala*, 1967 Ann. Mtg. Geological Society of America: IGN, Guatemala Bol. Geol. 4, p. 31-33; 69-71. (English and Spanish)
- 1970 *The geology of the Santiaguito volcanic dome, Guatemala*: Ph.D. Thesis, Dartmouth College, 253p. (Dissert. Abs. Int. 31, 6, 3485B.)
- 1972 Santiaguito volcanic dome, Guatemala: *GSA Bull.* 83, 5, 1413-1434.
- 1972 Notes on the 1902 eruption of Santa María Volcano: *Bull. Volc.* 36, 29-45.
- 1973 Pattern and mechanism of volcanic activity at the Santiaguito volcanic dome, Guatemala: *Bull. Volc.* 37, 1, 73-94.
- 1974 Nuée ardente from Santiaguito Volcano, April 1973: *Bull. Volc.* 37, 3, 365-371.
- 1974 Geochemistry of the Quezaltenango Valley ignimbrite, Guatemala (abs.): *EOS* 55, 4, 488.
- 1975 Influence of structural elements transverse to the Guatemalan volcanic chain on the location, character and chemistry of volcanic products (abs.): *IUGG Gen. Assembly* 16, (Grenoble) Prog., p. 110-111.
- 1977 Scavenging of volcanic aerosol by ash: atmospheric and volcanologic implications: *Geology* 5, 10, 621-624.

ROSE, W.I. Jr. (cont.)

- 1978 Modern composite volcanoes of northern Central America
(abs.): *GSA Abs. Prog.* 10, 144-145.
- 1978 Activity of Guatemala volcanoes (abs.): *EOS* 59, 1221-1222.
- BORNHORST, T.J., ROSE, W.I. Jr. (1981)
BORNHORST, T.J., ROSE, W.I. Jr., CHESNER, C.A. (1982)
BORNHORST, T.J., ROSE, W.I. Jr., HALSOR, S. (1983)
CADLE, R.D., HUEBERT, B.J., LAZRUS, A.L., ROSE, W.I. Jr. (1978)
CARR, M.J., ROSE, W.I. Jr., MAYFIELD, D.G. (1979)
CARR, M.J., ROSE, W.I. Jr., STOIBER, R.E. (1982)
DREXLER, J.W., ROSE, W.I. Jr., SPARKS, R., LEDBETTER, M.T.
(1978, 1980, 1980)
GRANT, N.K., ROSE, W.I. Jr., FULTZ, L.A. (1983)
HAHN, G.A., ROSE, W.I. Jr. (1976)
HAHN, G.A., ROSE, W.I. Jr., MEYERS, T. (1979)
HALSOR, S., ROSE, W.I. Jr., BORNHORST, T.J. (1983)
LARSON, P.B., ROSE, W.I. Jr. (1974)
LAZRUS, A.L., HUEBERT, B.J., CADLE, R.D., ROSE, W.I. Jr. (1978)
LEDBETTER, M.T., SPARKS, R., ROSE, W.I. Jr. (1978)
LOVE, M., WUNDERMAN, R.L., ROSE, W.I. Jr. (1980)
MARTIN, D.P., ROSE, W.I. Jr. (1981)
MURROW, P.J., ROSE, W.I. Jr. (1980)
PETERSON, P.S., ROSE, W.I. Jr. (1980)
SMITH, D.B., ZIELINSKI, R.A., ROSE, W.I. Jr. (1982)
SMITH, D.B., ZIELINSKI, R.A., ROSE, W.I. Jr., HUEBERT, B.J. (1982)
STOIBER, R.E., LEGGETT, D.C., JENKINS, R.P., MURRMANN, R.P.,
ROSE, W.I. Jr. (1971)
STOIBER, R.E., ROSE, W.I. Jr. (1968, 1969, 1970, 1972, 1972, 1974, 1974)
STOIBER, R.E., ROSE, W.I. Jr., BONIS, S. (1970)
WOODRUFF, L.G., ROSE, W.I. Jr. (1976)
WOODRUFF, L.G., ROSE, W.I. Jr., RIGOT, W. (1979)
WUNDERMAN, R.L., ROSE, W.I. Jr. (1980)
- ROSE, W.I. Jr., ANDERSON, A.T. Jr., WOODRUFF, L.G., BONIS, S.
1978 The October 1974 basaltic tephra from Fuego Volcano:
description and history of the magma body: *Jour. Volc. Geotherm. Res.* 4, 1/2, 3-53.

- ROSE, W.I. Jr., BONIS, S., STOIBER, R.E., KELLER, M.,
BICKFORD, T.
1973 Studies of volcanic ash from two recent Central American
eruptions: *Bull. Volc.* 37, 3, 338-364.
- ROSE, W.I. Jr., BORNHORST, T.J.
1981 Uranium and thorium in selected Quaternary volcanic rocks of
Guatemala and Sumatra: evidence for uranium redistribution,
in Goodell, P., Waters, A., eds., *Uranium in volcanic and
volcaniclastic rocks*: AAPG Studies in Geology 13, 13-21.
- 1982 Silicic pyroclastic rocks from Atilán Caldera, Guatemala -
eruption of a composite pluton (abs.): *EOS* 63, 45, 1155.
- ROSE, W.I. Jr., BORNHORST, T.J., DREXLER, J.W.
1982 Preliminary correlation of Quaternary volcanic ashes from the
Middle America Trench off Guatemala DSDP Leg 67: *DSDP*
67, 493-495.
- ROSE, W.I. Jr., BORNHORST, T.J., WUNDERMAN, R.L.
1981 Quaternary calderas of Guatemala and El Salvador and silicic
volcanic rocks (abs.): *GSA Abs. Prog.* 13, 7, 540-541.
- ROSE, W.I. Jr., CADLE, R.D., HEIDT, L., *et al.*
1978 Gas and H isotopic analyses of volcanic eruption clouds in
Guatemala (abs.): *EOS* 59, 12, 1222.
- 1980 Gas and hydrogen isotopic analyses of volcanic eruption clouds
in Guatemala sampled by aircraft: *Jour. Volc. Geotherm. Res.* 7,
1-2, 1-10.
- ROSE, W.I. Jr., CADLE, R.D., LAZRUS, A.L., *et al.*
1979 1978 volcanic eruption cloud sampling project (abs.): *GSA Abs.
Prog.* 10, 480-481.
- ROSE, W.I. Jr., CHUAN, R., CADLE, R.D., WOODS, D.
1980 Small particles in volcanic eruption clouds: *Am. Jour. Sci.* 280,
8, 671-696.
- ROSE, W.I. Jr., CHUAN, R., WOODS, D., CADLE, R.D.
1978 Atmospheric aerosol studies with the QCM Cascade Instrument:
Aerosol Technology Mtg. 11, Proc., Sept. 1978, Davis, California.

- ROSE, W.I. Jr., FRIEDMAN, I., WOODRUFF, L.G.
- 1980 Oxygen isotopic determination of sequentially erupted plagioclase in the 1974 magma of Fuego Volcano, Guatemala: *Bull. Volc.* 43, 1, 191-194.
- ROSE, W.I. Jr., GRANT, N.K.
- 1976 Petrology and geochemistry of a late Pleistocene rhyolite ash flow sheet, Guatemalan highlands (abs.): *GSA Abs. Prog.* 8, 5, 623-624.
- ROSE, W.I. Jr., GRANT, N.K., EASTER, J.
- 1979 Geochemistry of the Los Chocoyos Ash, Quezaltenango Valley, Guatemala, *in* Chapin, C., Elston, W., eds., *Ash-flow tuffs*: GSA Spec. Pap. 180, 87-99.
- ROSE, W.I. Jr., GRANT, N.K., HAHN, G.A., LANGE, I.M., POWELL, J., EASTER, J., DeGRAFF, J.
- 1977 The evolution of Santa María Volcano, Guatemala: *Jour. Geol.* 85, 63-87.
- ROSE, W.I. Jr., HAHN, G.A.
- 1976 Interbasin geochemical correlation of genetically related rhyolitic ash-flow and airfall tuffs, central and western Guatemala (abs.): *GSA Abs. Prog.* 8, 587.
- ROSE, W.I. Jr., HAHN, G.A., DREXLER, J.W., LOVE, M., PETERSON, P.S., WUNDERMAN, R.L.
- 1981 Quaternary tephra of northern Central America, *in* Sparks, R., Self, S., eds., *Tephra Studies*: Reidel, Holland, 193-212.
- ROSE, W.I. Jr., HEIDT, L., *et al.*
- 1980 Gas and hydrogen isotopic analyses of volcanic eruption clouds in Guatemala sampled by aircraft: *Jour. Volc. Geotherm. Res.* 7, 1-10.
- ROSE, W.I. Jr., JOHNSON, D.J., HAHN, G.A., JOHNS, G.W.
- 1975 *Skylab photography applied to geologic mapping in northwestern Central America*: NASA Tech. Mem. no. X-58168, p. 869-884.
- ROSE, W.I. Jr., JOHNSON, D.J., HAHN, G.A.
- 1975 Skylab S190 imagery applied to the structural geologic mapping of northern Central America (abs.): *EOS* 56, 6, 347.

- ROSE, W.I. Jr., MURROW, P.J., SELF, S.
- 1980 Determination of the total grain size distribution in a Vulcanian eruption column and its implications to stratospheric aerosol perturbation: *Geophys. Res. Letters* 7, 893-896.
- ROSE, W.I. Jr., PEARSON, T., BONIS, S.
- 1977 Nuée ardente eruption from the foot of a dacite lava flow, Santiaguito Volcano, Guatemala: *Bull. Volc.* 40, 1, 23-38.
- ROSE, W.I. Jr., PENFIELD, G.T., DREXLER, J.W., LARSON, P.B.
- 1980 Geochemistry of flank lavas of three composite cones within the Atitlán Cauldron, Guatemala: *Bull. Volc.* 43, 131-153.
- ROSE, W.I. Jr., STOIBER, R.E.
- 1972 Chemical reactions producing mineral incrustations at volcanic fumaroles in Central America (abs.): *EOS* 53, 4, 532.
- ROSE, W.I. Jr., STOIBER, R.E., BONIS, S.
- 1970 Volcanic activity at Santiaguito Volcano, Guatemala, June 1968-August 1969: *Bull. Volc.* 34, 295-307.
- ROSE, W.I. Jr., STOIBER, R.E., MALINCONICO, L.L.
- 1979 Budget of S and Cl released from shallow magma bodies at Fuego Volcano, Guatemala (abs.): *EOS* 61, 6, 67.
- 1981 Eruptive gas composition and fluxes of explosive volcanoes: budget of S and Cl emitted from Fuego Volcano, Guatemala, in Thorpe, R.S., ed., *Andesites. Orogenic andesites and related rocks*: Chichester, J. Wiley & Sons, 669-676.
- ROSE, W.I. Jr., WOODRUFF, L.G.
- 1976 Pattern of historic activity at Volcán Fuego (abs.): *EOS* 57, 4, 345.
- ROSE, W.I. Jr., WOODRUFF, L.G., BONIS, S.
- 1976 Magma composition changes during the 1974 eruption of Volcán Fuego: result of vertical variations of H₂O during shallow intratelluric crystal fractionation (abs.): *EOS* 57, 4, 346.
- ROSE, W.I. Jr., WOODRUFF, L.G., DREXLER, J.W.
- 1977 Crystal fractionation related to K₂O-SiO₂ and REE variations in calc-alkalic magmas (abs.): *GSA Abs. Prog.* 9, 1147.

- ROSE, W.I. Jr., WUNDERMAN, R.L., HOFFMAN, M., GALE, L.
1983 A volcanologist's review of atmospheric hazards of volcanic activity: Fuego and Mount St. Helens: *Jour. Volc. Geotherm. Res.* 17, 133-157.
- ROSEN, J.M.
HOFFMAN, D.J., ROSEN, J.M. (1976, 1977)
- ROSEN, J.M., HOFFMANN, D.J.
1981 A comparison of the stratospheric aerosol effects of the volcanic eruptions of Alaid in 1981, Mt. St. Helens in 1980 and Fuego in 1974 (abs.): *EOS* 62, 45, 886.
- ROSENFELD, J.
1978 *Surface failure at Lake Amatitlán attributed to liquefaction of deltaic sediments during the 1976 Guatemalan earthquake*: MA Thesis, Univ. Miami, Florida, 81p.
1980 The Santa Cruz ophiolite, Guatemala, Central America: *Carib. Geol. Conf.*, 9, vol. 2, República Dominicana, 451-452.
1981 *Geology of the western Sierra de Santa Cruz, Guatemala, C.A.: an ophiolite sequence*: Ph.D. Thesis, State Univ. New York at Binghamton, 313p.
HOOSE, S.N., WILSON, R.C., ROSENFELD, J. (1978)
NAGLE, F., ROSENFELD, J., STIPP, J.J. (1977)
- ROSS, C.A.
1979 Late Paleozoic collision of North and South America: *Geology* 7, 41-44.
- ROSS, J.J.
CARR, M.J., COX, R.E., KNAPP, J.C., PINEO, C.C., ROSS, J.J. (1969)
- ROUIMP, J.
AUBOUIN, J., STEPHAN, J.F., RENARD, V., ROUIMP, J., LONSDALE, P. (1981, 1982)
AUBOUIN, J., STEPHAN, J.F., ROUIMP, J., RENARD, V. (1982)
- ROWAN, L.C.
1982 *Preliminary photogeologic map of Chiapas, Mexico, and adjacent northwestern Guatemala prepared from Seasat radar image*: USGS Open-File Report, no. 82-0995.

- ROWETT, C.L.
WALPER, J.L., ROWETT, C.L. (1972)
- ROWETT, C.L., WALPER, J.L.
- 1972 Permian corals from near Huehuetenango, Guatemala: *Pacific Geol.* 5, 71-80.
- RUBEL, D.N.
- 1976 Surface features of quartz phenocrysts and fragments from non-welded ash-flows (abs.): *GSA Abs. Prog.* 8, 5, 624-625.
- RUSH, H.
- EGGERS, A.A., KRAUSE, J., RUSH, H., WARD, J. (1976, 1976)
- RUXTON, B., McDougall, I.
- 1967 Denudation rates in northeast Papua from potassium argon dating of lavas: *Am. Jour. Sci.* 265, 7, 545-561.

S

- SABER, H.
MORRIS, D.F., GHARIB, A., SABER, H. (1980)
- SACKS, I.
BROWN, L., KLEIN, J., MIDDLETON, R., SACKS, I., TERA, F. (1982, 1982)
- SALAZAR, O.D.
1978 Limitaciones para el uso de imágenes de sensores remotos en la investigación geológica en Guatemala: *Rev. Cartogr.* (Buenos Aires), no. 34, 169-170.
BONIS, S., SALAZAR, O.D. (1973)
- SANCHEZ, E.
WHITE, R.A., HARLOW, D.H., SANCHEZ, E. (1981)
WHITE, R.A., SANCHEZ, E., CIFUENTES, I., HARLOW, D.H. (1980)
- SANCHEZ-BARREDA, L.
GOSE, W.A., SANCHEZ-BARREDA, L. (1981)
- SANFORD, W.C.
1979 *An analysis of depositional environments and diagenesis of Tertiary volcanic sediment deposits of the northeastern Lago de Atitlán region, Guatemala:* MS Thesis, Texas Tech. Univ., 150p.
- SANDSTROM, M.A.
ANDERSON, T.H., ERDLAC, R.J. Jr., SANDSTROM, M.A. (1980)
- SANDSTROM, M.A., ANDERSON, T.H.
1979 Stratigraphy and petrography of a Permian shelf carbonate (Chochal Limestone), El Tapón Canyon, Guatemala (abs.): *GSA Abs. Prog.* 11, 2, 165.
- SARP, H.
BERTRAND, J., SARP, H. (1976)
- SAVAGE, J.C.
LISOWSKI, M., THATCHER, W., SAVAGE, J.C. (1978)
- SAWLAN, J., MURRAY, J.
1983 Trace metal remobilization in the interstitial waters of red clay and hemipelagic marine sediments: *Earth Planetary Sci. Lett.* 64, 2, 213-230.

- SCHEWE, L., CZAPLA, H.
- 1981 Der 160 m hohe Steinschüttdeich Chulac in Guatemala; Entwurf unter besonderer Berücksichtigung ungünstiger Gründungsbedingungen: *Bauingenieur* 56, 3, 81-87.
- SCHMIDT, V.A.
- ANDERSON, T.H., SCHMIDT, V.A. (1978, 1983)
- SCHMIDT, V.A., ANDERSON, T.H.
- 1978 Mesozoic crustal evolution of Middle America and the Caribbean: geophysical considerations (abs.): *EOS* 59, 404-405.
- SCHNITTER, N.J.
- 1982 There were giants on the earth in those days; discussion: *Jour. Geotech. Eng. Div., Am. Soc. Civil Eng.* 108, GT6, 902-904.
- SCHUSTER, J.C.
- MacVEAN, C., SCHUSTER, J.C. (1981)
- SCHWARTZ, D.P.
- 1972 Petrology and structural geology along the Motagua fault zone, Guatemala (abs.): *Carib. Geol. Conf.*, 6, Margarita, p. 299.
- 1976 *Geology of the Zacapa quadrangle and vicinity, Guatemala, Central America*: Ph.D. Thesis, State Univ. New York at Binghamton, 191p. (Dissert. Abs. Int., 37, 3B, 1152.)
- 1976 Pre-earthquake displacements; Motagua fault zone, Guatemala (abs.): *EOS* 57, 12, 949.
- 1976 The Motagua fault zone, Guatemala, Tertiary and Quaternary tectonics (abs.): *GSA Abs. Prog.* 8, 6, 1092.
- 1977 Active faulting along the Caribbean-North American plate boundary in Guatemala (abs.): *Carib. Geol. Conf.* 8, 180-181.
- 1978 *Mapa geológico del cuadrángulo Zacapa*: IGN, Guatemala, 1:50,000.
- SCHWARTZ, D.P., CLUFF, L., DONNELLY, T.W.
- 1978 Quaternary faulting along the Caribbean-North American plate boundary in Central America: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 1 (n.p., approx. 211-226), Guatemala City. (Also 1979, *Tectonophysics*, vol. 52, p. 431-445).

- SCHWARTZ, D.P., NEWCOMB, W.E.
1973 Motagua fault zone: a crustal suture (abs.): *EOS* 54, 4, 477.
- SCHWARTZ, D.P., SWAN, F.H.
1979 Quaternary faulting and deformations along the eastern Chixoy-Polochic Fault Zone, Guatemala (abs.): *GSA Abs. Prog.* 11, 7, 512.
- SCHWEIG, E.
SKILTON, N., SCHWEIG, E., VESSELL, R.K. (1983)
- SCOTT, G.
GOSE, W.A., SCOTT, G., SWARTZ, D. (1980)
- SEDLACEK, W., LAZRUS, A.L., GANDRUD, B.
1975 Stratospheric silicate injection by Volcán de Fuego (abs.): *EOS* 56, 11, 913.
- SEED, H.B., ARANGO, I., *et al.*
1981 Earthquake induced liquefaction near Lake Amatitlán, Guatemala: *Jour. Geotech. Eng. Div.*, Am. Soc. Civil Eng. 107, no. GT4, 501-518. (also Univ. California Earthquake Eng. Res. Cent. Rep. No. 70-2, 40p.)
- SEED, H.B., IDRISI, I.M., ARANGO, I.
1983 Evaluation of liquefaction potential using field performance data: *Jour. Geotech. Eng. Div.*, Am. Soc. Civil Eng. 109, 3, 458-482.
- SEED, H.B., LEE, K.L.
1977 Evaluation of liquefaction potential of sand deposits based on observations of performance in previous earthquakes, in Penzein, J., Chair., *Natl. Sci. Found.*, Washington, D.C., p. 46-68.
- SEELY, D.R.
1979 The evolution of structural highs bordering major forearc basins, in Watkins, J., Montadert, L., Dickerson, P., eds., *Geological and geophysical investigations of continental margins*: AAPG Mem. 29, 245-260.
- SEELY, D.R., VAIL, P.R., WALTON, G.G.
1974 Trench slope model, in Burk, C.A. and Drake, C.L., eds., *The geology of continental margins*: New York, Springer - Verlag, 249-260.

SEGOVIA, A.V., FOSS, J.E.

- 1980 Geopedologic factors and the Maya civilization of northern Petén, Guatemala (abs.): *GSA Abs. Prog.* 12, 7, 519.

SEGOVIA, A.V., FOSS, J.E., SOLER, E.A.

- 1980 Evaluation of soils and landscapes of the seasonal tropics by means of remote sensing images; an interdisciplinary study: *Intl. Symp. Remote Sensing Environment* 14, p. 915-927, San José, Costa Rica.

SELF, S.

- 1978 Mechanisms of Vulcanian explosions (abs.): *GSA Abs. Prog.* 10, 3, 146.
- 1978 Particle size distribution and morphology of ash in the Fuego and Santiaguito plumes (abs.): *EOS* 59, 12, 1222.
- 1982 Deposits of the vent area and air-fall deposits, in Ayres, L., ed., *Pyroclastic volcanism and deposits of Cenozoic intermediate to felsic volcanic islands with implications for Precambrian greenstone-belt volcanoes*: Short Course Notes, Geol. Assoc. Canada 2, 64-70.

NEWHALL, C.G., SELF, S., PAULL, C.K. (1980)

ROSE, W.I. Jr., MURROW, P.J., SELF, S. (1980)

WILLIAMS, S.N., SELF, S. (1982)

WILSON, L., SELF, S. (1978, 1980)

SELF, S., WILLIAMS, S.N.

- 1980 Triggering of the October 1902 eruption of Santa María Volcano, Guatemala, by a magma mixing event (abs.): *EOS* 61, 6, 68.

SENGOR, A.M.

- BURKE, K., GREPPI, J., SENGOR, A.M. (1978)

SHAH, H.

KIREMIDJIAN, A., SHAH, H. (1978)

KIREMIDJIAN, A., SHAH, H., LUBETKIN, L. (1977)

KIREMIDJIAN, A., SHAH, H., ZSUTTY, T. (1978)

SHARP, R.V.

BUCKNAM, R.C., PLAFKER, G., SHARP, R.V. (1978, 1978)

BUCKNAM, R.C., PLAFKER, G., SHARP, R.V., BONIS, S. (1976)

PLAFKER, G., SHARP, R.V., BUCKNAM, R.C., BONIS, S., BONILLA, M. (1976)

- SHEETS, P.
STROSS, F., SHEETS, P., ASARO, F., MICHEL, H. (1983)
- SHETTLE, E.
VOLZ, F.E., SHETTLE, E. (1976)
- SHEVCHENKO, A.Ya.
KURNOSOV, V.B., SHEVCHENKO, A.Ya. (1982)
- SHIKI, T., YAMASAKI, T.
1982 Lamina-by-lamina analysis of fine grained turbidite (abs.): *Intl. Cong. Sedimentology* 11, Hamilton, Canada, Intl. Assoc. Sedimentologists, 11, p. 4.
- SHIKI, T., YAMASAKI, T., HISATOMI, K.
1982 Features of grain-size distribution and mineral composition of turbiditic sediments from the Middle America Trench off Guatemala: *DSDP* 67, p. 537-548.
- SHIPLEY, T.H., DIDYK, B.M.
1982 Occurrence of methane hydrates offshore southern Mexico: *DSDP* 66, 547-555.
- SHIPLEY, T.H., *et al.*
1980 Tectonic processes on the Middle America Trench inner slope (abs.): *EOS* 61, 46, 1121.
- SHIPLEY, T.H., LADD, J.W., BUFFLER, R.T., WATKINS, J.S.
1982 Tectonic processes along the Middle America Trench inner slope, in Leggett, J., ed., *Trench forearc geology*: Geol. Soc. London Spec. Pub. 10, 95-106.
- SHOR, G.G. Jr.
1974 Continental margin of Middle America, in Burk, C.A., Drake, C.L., eds., *The geology of continental margins*: New York, Springer-Verlag, 599-602.
- SIEBERT, L.
SIMKIN, T., SIEBERT, L., McCLELLAND, L., BRIDGE, D., NEWHALL, C.G., LATTER, J. (1981)
- SIESSER, W.G.
1967 *Geology of the Cuilco quadrangle, Guatemala*: MS Thesis, Louisiana State Univ., 86p.
- BRADFORD, D.E., COLLINS, E.M., SIESSER, W.G. (1968)
BRADFORD, D.E., COLLINS, E.M., SIESSER, W.G., KESLER, S.E. (1968)

- SIESSER, W.G., BRADFORD, D.E., COLLINS, E.M.
1968 Geology of the southern part of the Sierra Madre de Chiapas,
Guatemala (abs.): *GSA Abs. Prog.* 1967, 204.
- SIFFRE, M., CAPPA, G.
1981 Cave explorations and archaeological discoveries in the cockpit
karst of Petén, Guatemala (abs.): *Intl. Cong. Speleology Proc.* 8,
286.
- SIMKIN, T., SIEBERT, L., McCLELLAND, L., BRIDGE, D.,
NEWHALL, C.G., LATTER, J.
1981 *Volcanoes of the world*: Stroudsburg, Pa., Hutchinson Ross, 232p.
- SIMMONS, W.A. Jr.
1972 *Stratigraphy and sedimentation of the Paleozoic rocks in the Maya
Mountains, British Honduras*: MS Thesis, Louisiana State Univ.,
87p.
- SKILTON, N., SCHWEIG, E., VESSELL, R.K.
1983 *Mapa geológico del cuadrángulo Alotenango*: IGN, Guatemala,
1:50,000.
- SMITH, D.B., ZIELINSKI, R.A.
1978 Trace metals in volcanic eruption clouds (abs.): *EOS* 59, 12,
1222.
- SMITH, D.B., ZIELINSKI, R.A., ROSE, W.I. Jr.
1982 Leachability of uranium and other elements from freshly
erupted volcanic ash: *Jour. Volc. Geotherm. Res.* 13, 1-2, 1-30.
(also USGS Open-File Report 81-0118, 99p., 1981.)
- SMITH, D.B., ZIELINSKI, R.A., ROSE, W.I. Jr., HUEBERT, B.J.
1982 Water-soluble material on aerosols collected within volcanic
eruption clouds: *Jour. Geophys. Res.* 87, C7, 4963-4972.
- SMITH, D.S.
1981 *Geology of the eastern half of the Tecpán Guatemala quadrangle,
Guatemala, Central America*: MS Thesis, Univ. of South Florida,
Tampa, 50p.
- SMITH, D.S., RITCHIE, A.W.
1981 Residual effects of the February 4, 1976 earthquake in
Guatemala (abs.): *Florida Scientist* 44, Suppl. 1, p. 45.

- SOLER, E.A.
SEGOVIA, A.V., FOSS, J.E., SOLER, E.A. (1980)
- SOSA, V.
1980 Variabilidad del grano de polen del género Liquidámbar:
Coloquio sobre Paleo-Botánica y Palinología, no. 3, p. 21-28,
México.
- SPARKS, R.
DREXLER, J.W., ROSE, W.I. Jr., SPARKS, R., LEDBETTER, M.T.
(1978, 1980, 1980)
LEDBETTER, M.T., SPARKS, R. (1979)
LEDBETTER, M.T., SPARKS, R., ROSE, W.I. Jr. (1978)
- SPENCE, W.
PERSON, W.J., SPENCE, W., DEWEY, J.W. (1976)
- SPENCE, W., PERSON, W.
1976 Tectonic setting and seismicity, *in* Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 4-11.
- STEHLI, F.G., GRANT, R.E.
1969 Silicified Permian brachiopods from Guatemala (abs.): *GSA Spec. Pap.* 121, 289-290.
1970 Permian brachiopods from Huehuetenango, Guatemala: *Jour. Paleont.* 44, 1, 23-26.
- STEINBRUGGE, K.V.
1976 Structural engineering observations in Guatemala City, *in* Espinosa, A., ed., *The Guatemalan earthquake of February 4, 1976, a preliminary report*: USGS Prof. Pap. 1002, 80-84.
- STEPHAN, J.F.
AUBOIN, J., STEPHAN, J.F., RENARD, V., ROUMP, J., LONSDALE, P.
(1981, 1982)
AUBOIN, J., STEPHAN, J.F., ROUMP, J., RENARD, V. (1982)
RENARD, V., AUBOIN, J., LONSDALE, P., STEPHAN, J.F. (1980)
- STEVENS, W.E.
1969 *Igneous petrology and geomorphology of the Huehuetenango quadrangle, Guatemala*: MS Thesis, Louisiana State Univ., 70p.
COLLINS, E.M., JOSEY, W.L., STEVENS, W.E. (1981)
- STEWART, G.
KANAMORI, H., STEWART, G. (1978)

- STIMSON, J.
 PAGE, R., STIMSON, J., STRUHSACKER, E. (1973)
- STIPP, J.J.
 CADWELL, H.H., BOGGS, S.H., STIPP, J.J. (1975)
 NAGLE, F., ROSENFELD, J., STIPP, J.J. (1977)
- STODDART, D.
 1962 Three Caribbean Atolls: Turneffe Islands, Lighthouse Reef, and Glover's Reef, British Honduras: *Atoll Research Bull.*, no. 87.
- STOESSELL, R.K.
 JOSEY, W.L., KESLER, S.E., STOESSELL, R.K. (1972)
- STOIBER, R.E.
 1971 Mapa geológico de la República de Guatemala (review): *Geotimes* 16, 5, 38-39.
 1976 Frequency of eruption at Central American volcanoes in relation to a tectonic model of the Central American Quaternary (abs.): *EOS* 57, 4, 345.
 1976 Riesgos volcánicos: *Revista Geofísica* No. 5, p. 88-91. (Inst. Panamericano Geog. e Hist., México.)
 1980 Volcanoes and the SO₂ connection: *Optical Spectra* 14, 8, 34-36.
 1982 Central America, in Vitaliano, D., ed., *World bibliography and index of Quaternary tephra*, Suppl. 1: Geo Abstracts, Bibliography 9, 16-18.
- BONIS, S., BOHNENBERGER, O.H., STOIBER, R.E., DECKER, R.W. (1966)
 BUELL, W.C., STOIBER, R.E. (1976)
 CARR, M.J., ROSE, W.I. Jr., STOIBER, R.E. (1982)
 CARR, M.J., STOIBER, R.E. (1973, 1974, 1975, 1977, 1978)
 CARR, M.J., STOIBER, R.E., DRAKE, C.L. (1974)
 DECKER, R.W., STOIBER, R.E. (eds.) (1974)
 HUGHES, J.M., STOIBER, R.E., IDE, G.M., MAYNARD, S.R., MACKAY, A.M. (1980)
 NIELSON, D., STOIBER, R.E. (1973)
 ROSE, W.I. Jr., BONIS, S., STOIBER, R.E., KELLER, M., BICKFORD, T. (1973)
 ROSE, W.I. Jr., STOIBER, R.E. (1972)
 ROSE, W.I. Jr., STOIBER, R.E., BONIS, S. (1970)
 ROSE, W.I. Jr., STOIBER, R.E., MALINCONICO, L.L. (1979, 1981)
 TAYLOR, P., STOIBER, R.E. (1973)

- STOIBER, R.E., BRATTON, G.
1978 Airborne correlation spectrometer measurements of SO₂ in eruption clouds from Guatemalan volcanoes (abs.): *EOS* 59, 12, 1222.
- STOIBER, R.E., CARR, M.J.
1971 Lithospheric plates, Benioff zones and volcanoes: *GSA Bull.* 82, 515-522.
- 1971 Recent volcanism and seismicity in Central America (abs.): *IUGG 15th General Assembly* (Moscow), Abs. No. 35-18, p. 27.
- 1973 Quaternary volcanic and tectonic segmentation of Central America: *Bull. Volc.* 37, 3, 304-323.
- 1976 Depths of magma formation and seismic gaps below volcanoes (abs.): *GSA Abs. Prog.* 8, 9, 1125-1126.
- STOIBER, R.E., EBERL, D.
1969 Fumaroles of Guatemala: *ICAIFI Pub. Geol.* 2, 39-43.
- STOIBER, R.E., JEPSEN, A.
1973 Sulfur dioxide contributions to the atmosphere by volcanoes: *Science* 182, 577-578.
- STOIBER, R.E., LEGGETT, D.C., JENKINS, R.P., MURRMANN, R.P., ROSE, W.I. Jr.
1971 Organic compounds in volcanic gas from Santiaguito Volcano, Guatemala: *GSA Bull.* 82, 2299-2302.
- STOIBER, R.E., MALINCONICO, L.L.
1981 Sulfur dioxide and other gas emissions from active volcanoes (abs.): *Arc volcanism*, IAVCEI Symp., Tokyo, p. 351-352.
- STOIBER, R.E., MALINCONICO, L.L., WILLIAMS, S.N.
1983 Use of the correlation spectrometer at volcanoes, in Tazieff, H., Sabrouk, J., eds., *Forecasting Volcanic Events*: Amsterdam, Elsevier, 425-444.
- STOIBER, R.E., MALINCONICO, L.L., WILLIAMS, S.N., WINNER, W.E.
1980 Shapes and concentration of volcanic plumes monitored in Central America and western United States (abs.): *EOS* 61, 1153.

- STOIBER, R.E., MALONE, G.C., BRATTON, G.
1978 Volcanic emission of SO₂ at Italian and Central American volcanoes (abs.): *GSA Abs. Prog.* 10, 148.
- STOIBER, R.E., ROSE, W.I. Jr.
1968 Recent volcanic activity, Santiaguito Volcano, Guatemala (abs.): *EOS* 49, 1, 362.
1969 Recent volcanic and fumarolic activity at Santiaguito Volcano, Guatemala: *Bull. Volc.* 33, 475-502.
1970 Geochemistry of Central American volcanic gas condensates: *GSA Bull.* 81, 2891-2912.
1972 Mineral incrustations at volcanic fumaroles in Central America (abs.): *EOS* 53, 4, 532.
1972 Chemical reactions producing mineral incrustations at volcanic fumaroles in Central America: *EOS* 53, 4, 532.
1974 Cl, F, and SO₂ in Central American volcanic gases: *Bull. Volc.* 37, 3, 454-460.
1974 Fumarole incrustations at active Central American volcanoes: *Geochim. Cosmochim. Acta* 38, 495-516.
- STOIBER, R.E., ROSE, W.I. Jr., BONIS, S.
1970 Volcanic activity at Santiaguito Volcano, Guatemala, June 1968-August 1969: *Bull. Volc.* 34, 295-307.
- STORMER, J. Jr.
TAYLOR, J., LEDBETTER, M.T., STORMER, J. Jr. (1981)
- STROSS, F., SHEETS, P., ASARO, F., MICHEL, H.
1983 Precise characterization of Guatemalan obsidian sources, and source determination of artifacts from Quiriguá: *Am. Antiquity* 48, 2, 323-346.
- STRUHSACKER, E.
PAGE, R., STIMSON, J., STRUHSACKER, E. (1973)
- STUART, L.C.
1966 The environment of the Central America cold-blooded vertebrate fauna: *Copeia* 4, 684-699.

- STUCKENRATH, R. Jr., COE, W.R., RALPH, E.K.
1966 University of Pennsylvania radiocarbon dates IX: *Radiocarbon* 8, 349-385.
- SUMMERHAYES, C.P., GILBERT, D.
1982 Distribution, origin, and hydrocarbon potential of organic matter in sediments from the Pacific margin of Guatemala: *DSDP* 67, p. 595-599.
- SUTTER, J.F.
1977 K/Ar ages of Cenozoic volcanic rocks in northern Central America (abs.): *Carib. Geol. Conf.* 8, p. 202.
1979 Late Cretaceous collisional tectonics along the Motagua fault zone, Guatemala (abs.): *GSA Abs. Prog.* 11, 7, 525-526.
- SUTTON, T.C., ISPHORDING, W.C.
1979 Geochemical and geomorphic differences between adjacent tectonic segments in Guatemala and El Salvador (abs.): *GSA Abs. Prog.* 11, 4, 214-215.
- SWARTZ, D.
GOSE, W.A., SCOTT, G., SWARTZ, D. (1980)
- SWAN, F.H.
SCHWARTZ, D.P., SWAN, F.H. (1979)
- SWEZEY, W.R.
1976 Ancient Maya jade deposits rediscovered: *Lapidary Journal* 30, 3, 742-747.
- SYKES, L.R.
1978 Plate tectonic framework of Middle America and Caribbean regions and prospects for earthquake prediction: *Intl. Symp. 1976 Guatemala earthquake*, vol. 2 (n.p., approx. 19-30), Guatemala City.
KELLEHER, J., SYKES, L.R., OLIVER, J. (1973)
MOLNAR, P., SYKES, L.R. (1969)
- SYKES, L.R., McCANN, W.R., KAFKA, A.L.
1982 Motion of the Caribbean plate during the last 7 million years and implications for earlier Cenozoic movements: *Jour. Geophys. Res.* 87, 10656-10676.

T

TANNER, J.

FELLER, E., TANNER, J., DENCE, M., (eds.) (1977)

TARDY, M.

AUBOUIN, J., BLANCHET, R., TARDY, M. (1976)

TAYLOR, J., LEDBETTER, M.T., STORMER, J. Jr.

1981 Airfall patterns of two Central/South American deep-sea tephras deduced from coarsest grain analyses (abs.): *GSA Abs. Prog.* 13, 7, 564.

TAYLOR, P.

1969 *Soluble material on volcanic ash*: MA Thesis, Dartmouth College, 77p.

TAYLOR, P., STOIBER, R.E.

1973 Soluble material on ash from active Central American volcanoes: *GSA Bull.* 84, 1031-1042.

TEETER, J.W.

1966 *The distribution of Recent marine Ostracoda from British Honduras*: Ph.D. Thesis, Rice Univ.

1975 The distribution of Holocene marine Ostracoda from British Honduras; in Wantland, K., Pusey, W. III, eds., *Belize shelf-carbonate sediments, clastic sediments and ecology*: AAPG Studies in Geology 2, 400-499.

TEPPER, J.H.

1981 *Compositional variation in air-fall from the 1902 eruption of Santa María volcano, Guatemala: Implication of a zoned magma chamber*: Senior Honors Thesis, Dartmouth College, 55p.

TERA, F.

BROWN, L., KLEIN, J., MIDDLETON, R., SACKS, I., TERA, F. (1982, 1982)

TERMER, F.

1966 Karl Theodor Sapper 1866-1945. Leben und Wirken eines deutschen Geographen und Geologen: *Lebensdarstellungen deutscher Naturforscher*, 12, 1-89, Deutsch. Akad. Naturforsch, Leopoldina, Leipzig (A.G. Barth).

- THARPE, L.W.
1976 *Fluvial sediments of the Río Achiguate and its tributaries, Guatemala*: MA Thesis, Univ. Missouri at Columbia, 127p.
- THATCHER, W.
LISOWSKI, M., THATCHER, W., SAVAGE, J.C. (1978)
- THOMPSON, P.R.
1982 Foraminifers of the Middle America Trench: *DSDP* 67, p. 351-381.
- THORPE, R.S., FRANCIS, P.W., MOORBATH, S.
1979 Strontium isotope evidence for petrogenesis of Central American andesites: *Nature* 277, 44-45.
- THUNELL, R.C.
KENNETT, J.P., McBIRNEY, A.R., THUNELL, R.C. (1977)
- THURMOND, T.
1972 Cuidad Real fauna, Late Pleistocene, from the Guatemalan highlands (abs.): *Soc. Vertebrate Paleontol. Ann. Mtg.* 32 (program), p. 8.
- THURMOND, T., DARY, R.M.
1973 The Cuidad Real fauna of Pleistocene mammals from the highlands of Guatemala (abs.): *GSA Abs. Prog.* 5, 5, 445.
- TIEDMANN, H.
1980 Risk optimization considering vibrational behavior of subsoil: *World Conf. Earthquake Eng. Proc.* no. 7, vol. 2, p. 267-270.
- TOCHER, D., TURCOTTE, T., HOBGOOD, J.
1978 Seismological aspects of the Guatemalan earthquake of February 4, 1976: *Intl. Symp. 1976 Guatemalan earthquake*, vol. 2 (n.p., approx. 173-188), Guatemala City.
- TOKSOZ, M., NABELEK, J., HONG, Y.
1983 Earthquake source properties and their relationship to short-term precursors and predictability (abs.): *EOS* 64, 18, 258.
- TOMBLIN, J.F.
1977 Caribbean seismicity, in Weaver, J.D., ed., *Geology, geophysics and resources of the Caribbean: report of the IDOE Workshop on the geology and marine geophysics of the Caribbean and its resources*: UNESCO, Intergov. Oceanogr. Comm., 63-77.

TOURNON, J.

AZÉMA, J., TOURNON, J. (1982)

TRIPET, J.P.

1977 Quelques aspects de la géographie, de la géologie et des karsts du Guatemala: *Cavernes* (Suisse) 21, 3-8, 39-45.

TSUKUDA, M., DEEVEY, E.S. Jr.

1967 Pollen analyses from four lakes in the southern Maya area of Guatemala and El Salvador, in Cushing, E.J., Wright, H.E., eds., *Quaternary Paleoecology*: New Haven, Yale Univ. Press, p.303-331.

TURCOTTE, T.

TOCHER, D., TURCOTTE, T., HOBGOOD, J. (1978)

U

URRUTIA-SOLE, J.F.

FOURNIER, R D., HANSHAW, B B., URRUTIA-SOLE, J.F. (1982)

U.S. BUR. MINES MINERALS YEARBOOK, Vol. 3 (Guatemala)

1973-1983 (1973, p. 952, 959-960)

(1974, p. 940-941)

(1976, p. 994, 1002-1004)

(1977, p. 1080, 1087-1088)

(1978, p. 1200, 1205)

(1980, p. 1306-1307, 1314)

(1981, p. 1154-1155, 1162-1166)

(1981, p. 1148-1149, 1156-1159)

(1982, p. 1232-1233, 1244-1250)

(1983, p. 1268-1269, 1276-1277)

U.S. GEOLOGICAL SURVEY

1981 USGS geological research in Guatemala: *USGS Prof. Pap.* 1275,
284-285

V

VAIL, P.R.

SEELY, D.R., VAIL, P.R., WALTON, G.G. (1974)

VALDES ILLESCAS, R.Y.

1974 *Bibliografía sobre el recurso agua en Guatemala (Bibliography of the water resources of Guatemala)*: Univ. San Carlos, Guatemala, Facultad de Humanidades, IGN, Guatemala, 321p.

VASSAUX, P.J.

1969 *Cincuenta años de sismología en Guatemala*: Observatorio Nacional, (INSIVUMEH), Guatemala, 98p.

VAUGHAN, H.H.

1979 *Prehistoric disturbance of vegetation in the area of Lake Yaxhá, Petén, Guatemala*: Ph.D. Thesis, Univ. Florida, 176p.

DEEVEY, E.S. Jr., GARRETT-JONES, S., VAUGHAN, H.H. (1980)
DEEVEY, E.S. Jr., VAUGHAN, H.H., DEEVEY, G.B. (1977)

VEDDER, J.G.

DILLON, W.P., VEDDER, J.G. (1973)

VELASCO, D.

MARTINO, O., HYDE, D., VELASCO, D. (1981)

VELASQUEZ, V.

MUÑOZ, P., VELASQUEZ, V., ARAGON, C., et al. (1978)

VESSELL, R.K.

1977 *Morphology, hydrology and sedimentology of the Río Guacalate-volcanic highlands - Guatemala*: MA Thesis, Univ. Missouri at Columbia, 144p.

1979 *Recent and ancient volcanioclastic sedimentation on an active continental margin*: Ph.D. Thesis, Texas Tech Univ., 127p.

DAVIES, D.K., VESSELL, R.K., MILES, R.C., FOLEY, M.G., BONIS, S. (1978)
FOLEY, M.G., VESSELL, R.K., DAVIES, D.K., BONIS, S. (1978)
SKILTON, N., SCHWEIG, E., VESSELL, R.K. (1983)

- VESSELL, R.K., DAVIES, D.K.
- 1978 Rates of denudation and sediment transport from the active volcano Fuego, Guatemala (abs.): *GSA Abs. Prog.* 10, 3, 151.
- 1979 Sedimentology of volcaniclastic deposits from 1971-1974 eruption cluster of Volcano Fuego, Guatemala (abs.): *AAPG Bull.* 63, 5, 843.
- 1981 *Nonmarine sedimentation in an active forearc basin*: Soc. Econ. Paleont. Mineral. Spec. Pub. 31, 31-45.
- VESSELL, R.K., DAVIES, D.K., FOLEY, M.G.
- 1979 Sedimentological characteristics and transport mechanics of flash floods; Guatemala (abs.): *GSA Abs. Prog.* 11, 6, 304-305.
- VESSELL, R.K., DAVIES, D.K., FOLEY, M.G., BONIS, S.
- 1977 Sedimentology and hydrology of flood flows on the active volcano, Fuego, Guatemala (abs.): *GSA Abs. Prog.* 9, 7, 1210-1211.
- VIKRE, P.C.
DURGIN, D.C., MALONE, G.C., VIKRE, P.C. (1970)
- VINIEGRA, F.
- 1971 Age and evolution of salt basins of southeastern Mexico: *AAPG Bull.* 55, 3, 478-494.
- 1981 Great carbonate bank of Yucatán, southern Mexico: *Jour. Petroleum Geol.* 3, 3, 247-278.
- VIVO ESCOTO, J.
- 1978 *Los sismos de Guatemala en febrero y marzo de 1976 y su relación con la morfología estructural de América Central*: Anuario de Geogr. UNAM 16, 11-44.
- VOLZ, F.E.
- 1975 Volcanic twilights from the Fuego eruption: *Science* 189, 4196, 48-50.
- VOLZ, F.E., SHETTLE, E.
- 1976 Haze in the stratosphere from the Fuego eruption: *Nature* 260, 5552, 652.
- von ESCHEN, S.A.
GARDNER, M.D., von ESCHEN, S.A. (1980)

von HUENE, R.

- AUBOUIN, J., BOURGOIS, J., von HUENE, R., AZÉMA, J. (1982)
AUBOUIN, J., von HUENE, R., *et al.* (1979, 1981, 1982, 1982, 1982, 1982)
LADD, J.W., von HUENE, R., WATKINS, J.S. (1977)
MOORE, G.F., LONSDALE, P., von HUENE, R. (1982)

von HUENE, R., AUBOUIN, J.

- 1982 Summary - Leg 67, Middle America Trench transect off
Guatemala: *DSDP* 67, p. 775-793.

von HUENE, R., AUBOUIN, J., *et al.*

- 1980 Leg 67: The Deep Sea Drilling Project Mid-America Trench
transect off Guatemala: *GSA Bull.* 91, 7, 421-432.

- 1982 Preliminary results, DSDP Leg 84, Middle America Trench off
Guatemala (abs.): *AAPG Bull.* 66, 10, 1703.

- 1982 A summary of DSDP Leg 67 shipboard results from the
Mid-America Trench transect off Guatemala, in Leggett, J., ed.,
Trench-forearc geology: Geol. Soc. London Spec. Pub. 10,
121-129.

von HUENE, R., LADD, J.W., NORTON, I.

- 1982 Geophysical observations of slope deposits, Middle America
Trench off Guatemala: *DSDP* 67, p. 719-732.

VUAGNAT, M.

- BERTRAND, J., VUAGNAT, M. (1975, 1976, 1977, 1980)

W

WAITE, L.E.

- 1983 *Biostratigraphy and paleoenvironmental analysis of the Sierra Madre Limestone (Cretaceous), Chiapas, southern Mexico*: MS Thesis, Univ. Texas at Arlington.

WALKER, G.P.

- 1967 Photographs of volcanoes near Mexico City and in Guatemala (abs.): *Geol. Soc. London Proc.* 1965-66, no. 1632, 94.
- 1981 Plinian eruptions and their products: *Bull. Volc.* 44, 3, 223-240.

WALKER, J.

- 1980 *Geochemical constraints on the petrogenesis of behind-the-front volcanism in Central America*: MS Thesis, Rutgers Univ., 124p.
- 1981 Petrogenesis of lavas from cinder cone fields behind the volcanic front of Central America: *Jour. Geol.* 89, 721-739.

WALPER, J.L.

ROWETT, C.L., WALPER, J.L. (1972)

WALPER, J.L., ROWETT, C.L.

- 1972 Plate tectonics and the origin of the Caribbean Sea and the Gulf of Mexico: *Gulf Coast Assoc. Geol. Soc. Trans.* 22, 105-116.

WALTON, G.G.

SEELY, D.R., VAIL, P.R., WALTON, G.G. (1974)

WARD, J.

EGGERS, A.A., KRAUSE, J., RUSH, H., WARD, J. (1976, 1976)

WARD, P.L.

- 1973 A prototype global volcano surveillance system and identification of a volcano-tectonic fault in Central America: *Bull. Volc.* 37, 438-442.

ENDO, E.T., WARD, P.L., MARQUEZ, D., ALLEN, R.V., HARLOW, D.H. (1973)
HARLOW, D.H., WARD, P.L. (1974)

- WARD, P.L., *et al.*
1974 *Development and evaluation of a prototype global volcano surveillance system utilizing the ERTS-1 satellite data collection system*: USGS Open-File Report, 154p.
- 1974 *A new method for monitoring global volcanic activity*: U.S. Natl. Aeronaut. Space Admin. (NASA) Spec. Pub. 351, 681-689.
- WASSERBURG, G.J.
JACOBSEN, S.B., WASSERBURG, G.J. (1979)
- WATKINS, J.S.
LADD, J.W., BUFFLER, R.T., WATKINS, J.S., WORZEL, J. (1976)
LADD, J.W., von HUENE, R., WATKINS, J.S. (1977)
SHIPLEY, T.H., LADD, J.W., BUFFLER, R.T., WATKINS, J.S. (1982)
- WATKINS, J.S., McMILLEN, K.J., *et al.*
1982 Tectonic synthesis, Leg 66: transect and vicinity: *DSDP* 66, 837-849.
- WEAVER, J.D., (ed.)
1977 *Geology, geophysics and resources of the Caribbean*: IOC, UNESCO, Mayaguez, Univ. Puerto Rico Press, 150p.
- WEBB, S.
1980 North American mammalian chronology and the interamerican interchange (abs.): *GSA Abs. Prog.* 12, 7, 546.
- WEED, S.B.
CALVERT, C.S., WEED, S.B., BUOL, S.W. (1979)
- WEICHERT, D.H.
1976 Earthquake reconnaissance: Guatemala, February 1976: *Geosci. Canada* 3, 208-214.
- WEILL, D.F.
McBIRNEY, A.R., WEILL, D.F. (1966)
- WEISS, C.M
1971 *Water quality investigations, Guatemala: Lake Atitlán, 1968-1970*: Univ. N. Carolina, Sch. Pub. Health, Dept. Environ. Sci. Engin., ESE Pub. 274, 175p.

- WEISS, C.M. (cont.)
- 1971 *Water quality investigations, Guatemala: Lake Amatitlán, 1969-1970*: Univ. N. Carolina, Sch. Pub. Health, Dept. Environ. Sci. Engin., ESE Pub. 281, 135p.
- WEISS, J.
- BARDINTZEFF, J.M., BROUSSE, R., CLOCHIATTI, R., WEISS, J. (1980)
- WESSON, J.M.
- 1967 *Post-Paleozoic stratigraphy, igneous petrology, economic geology, and geomorphology of the Nebaj quadrangle, Guatemala*: MS Thesis, Louisiana State Univ., 114p.
- JOSEY, W.L., McREE, D.F., WESSON, J.M. (1975)
- WEST, R.C., AUGELLI, J.P.
- 1966 Physical patterns, in *Middle America, its lands and peoples*, Chap. 2: Englewood Cliffs, N.J., Prentice-Hall, p. 20-60.
- WESTBERG, M.J., RIEDEL, W.R.
- 1982 Radiolarians from the Middle America Trench off Guatemala, DSDP Leg 67: *DSDP 67*, p. 401-424.
- WESTBROOK, G.
- LADD, J.W., WESTBROOK, G., LEWIS, S. (1982)
- WEYL, R.
- 1966 Eine reliefkarte des Hochlandes von Guatemala und ihre geologische interpretation: *Natur. u. Mus.* 96, 2, 63-68.
- 1966 Die palaogeographische entwicklung des mittelamerikanischen Raumes: *Z. Deutsch. Geol. Ges.* band 116, 3. teil p. 578-583.
- 1970 Mittelamerika: *Umschau* 70, 10, 295-299.
- 1971 Mittelamerika (Literaturbericht), mit Beitrag von Bohnenberger, O.: *Zbl. Geol. Palaont.*, Teil 1, 1970, 1002-1051.
- 1974 Die palaogeographische Entwicklung Mittelamerikas: *Zbl. Geol. Palaont.* Teil 1, 1973, 432-466.
- 1978 Magmatismus und Metallogenese in Mittelamerika: *Münster. Forsch. Geol. Palaont.* 44/45, p. 43-85.
- 1980 *Geology of Central America, Beiträge zur Regionalen Geologie der Erde*: Berlin, Gebrüder Borntraeger, 371p.
- PICHLER, H., WEYL, R. (1973, 1976)

- WHITCOMB, J.P.
LANGER, C.J., WHITCOMB, J.P., ABURTO, A. (1976)
- WHITE, D.L.
1979 Braided-stream processes and facies in modern arc-trench gap, southwestern Guatemala (abs.): *AAPG Bull.* 63, 3, 552.
- WHITE, L.
1977 Central America: diverse mineralization provides targets for exploration: *Engin. Min. Jour.* Nov., 159-198.
- WHITE, R.A.
HARLOW, D.H., WHITE, R.A. (1980)
- WHITE, R.A., HARLOW, D.H.
1979 *Preliminary catalog of aftershocks of the Guatemala earthquake of February 4, 1976 from the area between Guatemala City and Lake Atitlán (February-June 1976)*: USGS Open-File Report 79-864, 60p.
1980 *Preliminary catalog of seismicity from south-central Guatemala, July 1 through December 31, 1976*: USGS Open-File Report No. 80-83, 39p.
- WHITE, R.A., HARLOW, D.H., SANCHEZ, E.
1981 A 9-month long earthquake swarm in southeastern Guatemala (abs.): *EOS* 62, 45, 1028.
- WHITE, R.A., SANCHEZ, E., CIFUENTES, I., HARLOW, D.H.
1980 *Preliminary report to the government of Guatemala on the ongoing earthquake swarm in the Department of Santa Rosa, Guatemala*: USGS Open-File Report 80-900, 24p.
- WIDHELM, S. (c.f. BIODEAU 1978, 1979)
BONILLA, M., BONIS, S., WIDHELM, S. (1976)
- WIECZOREK, G.
HARP, E., WIECZOREK, G., WILSON, R.C. (1978)
HARP, E., WIECZOREK, G., WILSON, R.C., FLEMING, R. (1976)
HARP, E., WILSON, R.C., WIECZOREK, G. (1978, 1981)
- WILLEY, G.R.
1982 Maya archaeology: *Science* 215, 4530, 260-267.
BERGER, R., DeATLEY, S., PROTSCHE, R., WILLEY, G.R. (1974)

- WILLIAMS, H., McBIRNEY, A.R.
1969 *Volcanic history of Honduras*: Calif. Univ. Pub. Geol. Sci. 85, 101p.
- 1979 *Volcanology*: San Francisco, Freeman, Cooper & Co., 397p.
- WILLIAMS, M.D.
1975 Emplacement of Sierra de Santa Cruz, eastern Guatemala: *AAPG Bull.* 59, 7, 1211-1216.
- WILLIAMS, S.N.
1979 *The October, 1902 eruption of Santa María Volcano, Guatemala*: MA Thesis, Dartmouth College, 140p.
- SELF, S., WILLIAMS, S.N. (1980)
STOIBER, R.E., MALINCONICO, L.L., WILLIAMS, S.N. (1983)
STOIBER, R.E., MALINCONICO, L.L., WILLIAMS, S.N., WINNER, W.E. (1980)
- WILLIAMS, S.N., SELF, S.
1982 The October 1902 Plinian eruption of Santa María Volcano, Guatemala: *Jour. Volc. Geotherm. Res.* 16, 1-2, 33-56.
- WILSON, H.H.
1974 Cretaceous sedimentation and orogeny in nuclear Central America: *AAPG Bull.* 58, 7, 1348-1396.
- WILSON, H.H., LEUTZE, W.P.
1974 *Guatemala field-trip guidebook*: Soc. Econ. Paleont. Mineral. - Gulf Coast Assoc. Geol. Soc., 41p.
- WILSON, L., SELF, S.
1978 Volcanic explosion plumes; density, temperature and particle content estimates from plume motions (abs.): *EOS* 59, 12, 1222.
- 1980 Volcanic explosion clouds; density, temperature, and particle content estimates from cloud motion: *Jour. Geophys. Res.* 85, B5, 2567-2572.
- WILSON, R.C.
HARP, E., WIECZOREK, G., WILSON, R.C. (1978)
HARP, E., WIECZOREK, G., WILSON, R.C., FLEMING, R. (1976)
HARP, E., WILSON, R.C., WIECZOREK, G. (1978, 1981)
HOOSE, S.N., WILSON, R.C. (1976)
HOOSE, S.N., WILSON, R.C., ROSENFELD, J. (1978)

- WINNER, W.E.
STOIBER, R.E., MALINCONICO, L.L., WILLIAMS, S.N., WINNER, W.E.
(1980)
- WISEMAN, F.M.
1974 *Paleoecology and the prehistoric Maya; a history of man-land relationships in the tropics*: MS Thesis, Univ. Arizona.
- WOHNLICH, M.
1981 Felsmechanische Untersuchungen in der vulkanischen Gesteinen Zentralamerikas: *Unser Betrieb (Deilmann Haniel GmbH)* 29, 3, 3-7.
- WOLF, M.
1982 Coal petrological studies of sediments from sites 496, 499 and 500, DSDP Leg 67, Middle America Trench and slope off Guatemala: *DSDP 67*, p. 601-602.
- WOOD, R.
1973 Microearthquakes at Central American volcanoes: *SSA Bull.* 64, 275-277.
- WOODBURNE, M.O.
1969 A late Pleistocene occurrence of the collared peccary, *Dicotyles Tajacu*, in Guatemala: *Jour. Mammalogy* 50, 1, 121-125.
- WOODCOCK, S.F.
1975 *Crustal structure of the Tehuantepec Ridge and adjacent continental margins of southwestern Mexico and western Guatemala*: MS Thesis, Oregon State Univ.
- COUCH, R., WOODCOCK, S.F. (1981)
- WOODRUFF, L.G.
1977 *Contrasting fractionation patterns for magmas from two calc-alkaline volcanoes in Central America*: MS Thesis, Michigan Technol. Univ.
- ROSE, W.I. Jr., ANDERSON, A.T. Jr., WOODRUFF, L.G., BONIS, S. (1978)
ROSE, W.I. Jr., FRIEDMAN, I., WOODRUFF, L.G. (1980)
ROSE, W.I. Jr., WOODRUFF, L.G. (1976)
ROSE, W.I. Jr., WOODRUFF, L.G., BONIS, S. (1976)
ROSE, W.I. Jr., WOODRUFF, L.G., DREXLER, J.W. (1977)

- WOODRUFF, L.G., ROSE, W.I. Jr.
1976 Pattern of historic activity at Volcán Fuego (abs.): *EOS* 57, 4, 345.
- WOODRUFF, L.G., ROSE, W.I. Jr., RIGOT, W.
1979 Contrasting fractionation patterns for sequential magmas from two calc-alkaline volcanoes in Central America: *Jour. Volc. Geotherm. Res.* 6, 3-4, 217-240.
- WOODS, D.C.
CHUAN, R., WOODS, D.C. (1980)
ROSE, W.I. Jr., CHUAN, R., CADLE, R.D., WOODS, D.C. (1980)
ROSE, W.I. Jr., CHUAN, R., WOODS, D.C., CADLE, R.D. (1978)
- WOODS, D.C., CHUAN, R.
1978 Size distribution, morphology and elemental composition of fine particles in volcanic plumes (abs.): *EOS* 59, 12, 1222.
- WOOLARD, G., MONGES CALDERA, J., et al.
1966 Catálogo de estaciones gravimétricas en América Latina, Pt. 1: *Geof. Int.* 6, 3-4, 86p.
- WORZEL, J.
LADD, J.W., BUFFLER, R., WATKINS, J.S., WORZEL, J. (1976)
- WOULFF, G.
REASENBURG, P., CHOET, B., WOULFF, G. (1973)
- WOULFF, G., McGETCHIN, T.R.
1976 Acoustic noise from volcanoes; theory and experiment: *Royal Astron. Soc., Geophys. Jour.* 45, 3, 601-616.
- WUNDERMAN, R.L.
1982 *Amatitlán, an active resurgent caldera immediately south of Guatemala City, Guatemala*: MS Thesis, Michigan Technol. Univ., 192p.
- LOVE, M., WUNDERMAN, R.L., ROSE, W.I. Jr. (1980)
ROSE, W.I. Jr., BORNHORST, T.J., WUNDERMAN, R.L. (1981)
ROSE, W.I. Jr., HAHN, G.A., DREXLER, J.W., LOVE, M., PETERSON, P.S., WUNDERMAN, R.L. (1981)
ROSE, W.I. Jr., WUNDERMAN, R.L., HOFFMAN, M., GALE, L. (1983)
- WUNDERMAN, R.L., ROSE, W.I. Jr.
1980 Hornblendes in volcanic rocks of northern Central America (abs.): *EOS* 61, 66.

Y

YAMASAKI, T.

SHIKI, T., YAMASAKI, T. (1982)

SHIKI, T., YAMASAKI, T., HISATOMI, K. (1982)

YANG, S.R.

1976 *Major chemical relations in the volcanic and intrusive rocks of southeastern Guatemala and their relationship to the tectonic model of an island arc:* MS Thesis, Univ. Texas at Arlington, 62p.

YEZDANI, G.H.

DEEVEY, E.S. Jr., BRENNER, M., FLANNERY, M.S., YEZDANI, G.H.
(1980)

Z

ZANTOP, H.

PETERSEN, E U., ZANTOP, H. (1980)

ZIELINSKI, R.A.

SMITH, D B., ZIELINSKI, R.A. (1978)

SMITH, D B., ZIELINSKI, R.A., ROSE, W I Jr. (1982)

SMITH, D B., ZIELINSKI, R.A., ROSE, W I Jr., HUEBERT, B.J. (1982)

ZSUTTY, T.

KIREMIDJIAN, A., SHAH, H., ZSUTTY, T. (1978)

Este libro se terminó de im-
primir el **24** de mayo de 1990,
en los talleres del Centro Im-
presor Piedra Santa.
Guatemala, C.A.

